SEQUENCE LISTING

<110> Ballinger, Dennis
     Loeb, Debra
     Montgomery, Julie
     Tang, Y. Tom
     Zhou, Ping
     Goodrich, Ryle
     Liu, Chenghua
     Asundi, Vinod
     Zhao, Qing
     Wehrman, Tom
     Drmanac, Radoje
     Ren, Feiyan
     Qian, Xiahong
     Wang, Dunrui

<120> MATERIALS AND METHODS RELATING TO LIPID METABOLISM

<130> 28110/35915A

<150> US 60/197,137
<151> 2000-04-14

<150> US 09/714,936
<151> 2000-11-17

<150> US 09/667,298
<151> 2000-09-22

<150> US 09/631,451
<151> 2000-08-03

<150> US 09/598,042
<151> 2000-06-20

<160> 45

<170> PatentIn version 3.0

<210> 1
<211> 1858
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (46)..(1143)

<220>
<221> misc_feature
<222> (46)..(1143)
<223> n = a or c or g or t

<400> 1
cccacgcgtc cgggcctccc tccacctgtc ttctcagagc agata atg gca agc atg   57
                                                  Met Ala Ser Met
                                                  1

gct gcc gtg ctc acc tgg gct ctg gct ctt ctt tca gcg ttt tcg gcc   105
Ala Ala Val Leu Thr Trp Ala Leu Ala Leu Leu Ser Ala Phe Ser Ala
5   10   15   20

```
acc cag gca cgg aaa ggc ttc tgg gac tac ttc agc cag acc agc ggg      153
Thr Gln Ala Arg Lys Gly Phe Trp Asp Tyr Phe Ser Gln Thr Ser Gly
                25                      30                  35

gac aaa ggc agg gtg gag cag atc cat cag cag aag atg gct cgc gag      201
Asp Lys Gly Arg Val Glu Gln Ile His Gln Gln Lys Met Ala Arg Glu
            40                      45                  50

ccc gcg acc ctg aaa gac agc ctt gag caa gac ctc aac aat atg aac      249
Pro Ala Thr Leu Lys Asp Ser Leu Glu Gln Asp Leu Asn Asn Met Asn
        55                      60                  65

aag ttc ctg gaa aag ctg agg cct ctg agt ggg agc gag gct cct cgg      297
Lys Phe Leu Glu Lys Leu Arg Pro Leu Ser Gly Ser Glu Ala Pro Arg
    70                      75                  80

ctc cca cag gac ccg gtg ggc atg cgg cgg cag ctg cag gag gag ttg      345
Leu Pro Gln Asp Pro Val Gly Met Arg Arg Gln Leu Gln Glu Glu Leu
85                      90                  95                  100

gag gag gtg aag gct cgc ctc cag ccc tac atg gca gag gcg cac gag      393
Glu Glu Val Lys Ala Arg Leu Gln Pro Tyr Met Ala Glu Ala His Glu
                105                     110                 115

ctg gtg ggc tgg aat ttg gag ggc ttg cgg cag caa ctg aag ccc tac      441
Leu Val Gly Trp Asn Leu Glu Gly Leu Arg Gln Gln Leu Lys Pro Tyr
            120                     125                 130

acg atg gat ctg atg gag cag gtg gcc ctg cgc gtg cag gag ctg cag      489
Thr Met Asp Leu Met Glu Gln Val Ala Leu Arg Val Gln Glu Leu Gln
        135                     140                 145

gag cag ttg cgc gtg gtg ggg gaa gac acc aag gcc cag ttg ctg ggg      537
Glu Gln Leu Arg Val Val Gly Glu Asp Thr Lys Ala Gln Leu Leu Gly
    150                     155                 160

ggc gtg gac gag gct tgg gct ttg ctg cag gga ctg cag agc cgc gtg      585
Gly Val Asp Glu Ala Trp Ala Leu Leu Gln Gly Leu Gln Ser Arg Val
165                     170                 175                 180

gtg cac cac acc ggc cgc ttc aaa gag ctc ttc cac cca tac gcc gag      633
Val His His Thr Gly Arg Phe Lys Glu Leu Phe His Pro Tyr Ala Glu
                185                     190                 195

agc ctg gtg agc ggc atc ggg cgc cac gtg cag gag ctg cac cgc agt      681
Ser Leu Val Ser Gly Ile Gly Arg His Val Gln Glu Leu His Arg Ser
            200                     205                 210

gtg gct ccg cac gcc ccc gcc agc ccc gcg cgc ctc agt cgc tgc gtg      729
Val Ala Pro His Ala Pro Ala Ser Pro Ala Arg Leu Ser Arg Cys Val
        215                     220                 225

cag gtg ctc tcc cgg aag ctc acg ctc aag gcc aag gcc ctg cac gca      777
Gln Val Leu Ser Arg Lys Leu Thr Leu Lys Ala Lys Ala Leu His Ala
    230                     235                 240

cgc atc cag cag aac ctg gac cag ctg cgc gaa gag ctc agc aga gcc      825
Arg Ile Gln Gln Asn Leu Asp Gln Leu Arg Glu Glu Leu Ser Arg Ala
245                     250                 255                 260

ttt gca ggc act ggg act gag gaa ggg gcc ggc ccg gac ccc cag atg      873
Phe Ala Gly Thr Gly Thr Glu Glu Gly Ala Gly Pro Asp Pro Gln Met
                265                     270                 275
```

```
ctc tcc gag gag gtg cgc cag cga ctt cag gct ttc cgc cag gac acc      921
Leu Ser Glu Glu Val Arg Gln Arg Leu Gln Ala Phe Arg Gln Asp Thr
            280               285               290

tac ctg cag ata gct gcc ttc act cgc gcc atc gac cag gag act gag      969
Tyr Leu Gln Ile Ala Ala Phe Thr Arg Ala Ile Asp Gln Glu Thr Glu
            295               300               305

gag gtc cag cag cag ctg gcg cca cct cca cca ggc cac agt gcc ttc     1017
Glu Val Gln Gln Gln Leu Ala Pro Pro Pro Pro Gly His Ser Ala Phe
            310               315               320

gcc cca gag ttt caa caa aca gac agt ggc aag gtt ctg agc aag ctg     1065
Ala Pro Glu Phe Gln Gln Thr Asp Ser Gly Lys Val Leu Ser Lys Leu
325               330               335               340

cag gcc cgt ctg gat gac ctg tgg gaa gac atc act cac agc ctt cat     1113
Gln Ala Arg Leu Asp Asp Leu Trp Glu Asp Ile Thr His Ser Leu His
                345               350               355

gac cag ggc cac agc cat ctg ggg gac ccc tgaggatcta cctgcccagg       1163
Asp Gln Gly His Ser His Leu Gly Asp Pro
                360               365

cccattccca gctccttgtc tggggagcct tggctctgag cctctagcat ggttcagtcc   1223

ttgaaagtgg cctgttgggt ggaggtggga aggtcctgtg caggacaggg aggccaccaa   1283

aggggctgct gtctcctgca tatccagcct cctgcgactc cccaatctgg atgcattaca   1343

ttcaccaggc tttgcaaacc cagcctccca gtgctcattt gggaatgctc atgagttact   1403

ccattcaagg gtgagggagt agggagggag aggcaccatg catgtgggtg attatctgca   1463

agcctgtttg ccgtgatgct ggaagcctgt gccactacat cctggagttt ggctctagtc   1523

acttctggct gcctggtggc cactgctaca gctggtccac agagaggagc acttgtctcc   1583

ccagggctgc catggcagct atcaggggaa tagaagggag aaagagaata tcatggggag   1643

aacatgtgat ggtgtgtgaa tatccctgct ggctctgatg ctggtgggta cgaaaggtgt   1703

gggctgggat aagagagggc agagcccatg ttttctgaca taactctaca cctanataag   1763

ggactgaacc cttccaactg cgggagctcc ttaaaccctt ctggggagca tactgggggc   1823

tcttccccat cttcagcccc ttcctctggg ttccc                            1858
```

```
<210>  2
<211>  366
<212>  PRT
<213>  Homo sapiens

<220>
<221>  misc_feature
<222>  (46)..(1143)
<223>  n = a or c or g or t

<400>  2

Met Ala Ser Met Ala Ala Val Leu Thr Trp Ala Leu Ala Leu Leu Ser
1               5                   10                  15
```

```
Ala Phe Ser Ala Thr Gln Ala Arg Lys Gly Phe Trp Asp Tyr Phe Ser
        20                  25                  30

Gln Thr Ser Gly Asp Lys Gly Arg Val Glu Gln Ile His Gln Gln Lys
        35                  40                  45

Met Ala Arg Glu Pro Ala Thr Leu Lys Asp Ser Leu Glu Gln Asp Leu
    50                  55                  60

Asn Asn Met Asn Lys Phe Leu Glu Lys Leu Arg Pro Leu Ser Gly Ser
65                  70                  75                  80

Glu Ala Pro Arg Leu Pro Gln Asp Pro Val Gly Met Arg Arg Gln Leu
                85                  90                  95

Gln Glu Glu Leu Glu Glu Val Lys Ala Arg Leu Gln Pro Tyr Met Ala
            100                 105                 110

Glu Ala His Glu Leu Val Gly Trp Asn Leu Glu Gly Leu Arg Gln Gln
            115                 120                 125

Leu Lys Pro Tyr Thr Met Asp Leu Met Glu Gln Val Ala Leu Arg Val
    130                 135                 140

Gln Glu Leu Gln Glu Gln Leu Arg Val Val Gly Glu Asp Thr Lys Ala
145                 150                 155                 160

Gln Leu Leu Gly Gly Val Asp Glu Ala Trp Ala Leu Leu Gln Gly Leu
                165                 170                 175

Gln Ser Arg Val Val His His Thr Gly Arg Phe Lys Glu Leu Phe His
                180                 185                 190

Pro Tyr Ala Glu Ser Leu Val Ser Gly Ile Gly Arg His Val Gln Glu
        195                 200                 205

Leu His Arg Ser Val Ala Pro His Ala Pro Ala Ser Pro Ala Arg Leu
    210                 215                 220

Ser Arg Cys Val Gln Val Leu Ser Arg Lys Leu Thr Leu Lys Ala Lys
225                 230                 235                 240

Ala Leu His Ala Arg Ile Gln Gln Asn Leu Asp Gln Leu Arg Glu Glu
                245                 250                 255

Leu Ser Arg Ala Phe Ala Gly Thr Gly Thr Glu Glu Gly Ala Gly Pro
        260                 265                 270
```

```
Asp Pro Gln Met Leu Ser Glu Glu Val Arg Gln Arg Leu Gln Ala Phe
        275                 280             285

Arg Gln Asp Thr Tyr Leu Gln Ile Ala Ala Phe Thr Arg Ala Ile Asp
    290                 295             300

Gln Glu Thr Glu Glu Val Gln Gln Gln Leu Ala Pro Pro Pro Pro Gly
305                 310             315                 320

His Ser Ala Phe Ala Pro Glu Phe Gln Gln Thr Asp Ser Gly Lys Val
            325             330             335

Leu Ser Lys Leu Gln Ala Arg Leu Asp Asp Leu Trp Glu Asp Ile Thr
        340                 345                 350

His Ser Leu His Asp Gln Gly His Ser His Leu Gly Asp Pro
        355                 360             365


<210>   3
<211>   1425
<212>   DNA
<213>   Homo sapiens

<220>
<221>   CDS
<222>   (181)..(1146)

<400>   3
gccaggagcc atgtgggttt ttctaggaac caaaatcact tcccggaatt gaccaactgg      60

tagactcgcc tagaggggaa gcattgtgtc ctagttgagg ctaacagtca gtatccagcc     120

tcaacattca gcagaggccc cagatcagcg tctgagccag gccaacaatg accaaggagg     180

atg gga tcc tgg gtg cag ctc atc aca agc gtc ggg gtg cag caa aac     228
Met Gly Ser Trp Val Gln Leu Ile Thr Ser Val Gly Val Gln Gln Asn
1               5                   10                  15

cat cca ggc tgg aca gtg gct gga cag ttc caa gaa aag aaa cgc ttc     276
His Pro Gly Trp Thr Val Ala Gly Gln Phe Gln Glu Lys Lys Arg Phe
            20                  25                  30

act gaa gaa gtc att gaa tac ttc cag aag aaa gtt agc cca gtg cat     324
Thr Glu Glu Val Ile Glu Tyr Phe Gln Lys Lys Val Ser Pro Val His
        35                  40                  45

ctg aaa atc ctg ctg act agc gat gaa gcc tgg aag aga ttc gtg cgt     372
Leu Lys Ile Leu Leu Thr Ser Asp Glu Ala Trp Lys Arg Phe Val Arg
    50                  55                  60

gtg gct gaa ttg ccc agg gaa gaa gca gat gct ctc tat gaa gct ctg     420
Val Ala Glu Leu Pro Arg Glu Glu Ala Asp Ala Leu Tyr Glu Ala Leu
65                  70                  75                  80

aag aat ctt aca cca tat gtg gct att gag gac aaa gac atg cag caa     468
Lys Asn Leu Thr Pro Tyr Val Ala Ile Glu Asp Lys Asp Met Gln Gln
```

```
                    85                  90                    95

aaa gaa cag cag ttt agg gag tgg ttt ttg aaa gag ttt cct caa atc    516
Lys Glu Gln Gln Phe Arg Glu Trp Phe Leu Lys Glu Phe Pro Gln Ile
            100                 105                 110

aga tgg aag att cag gag tcc ata gaa agg ctt cgt gtc att gca aat    564
Arg Trp Lys Ile Gln Glu Ser Ile Glu Arg Leu Arg Val Ile Ala Asn
            115                 120                 125

gag att gaa aag gtc cac aga ggc tgc gtc atc gcc aat gtg gtg tct    612
Glu Ile Glu Lys Val His Arg Gly Cys Val Ile Ala Asn Val Val Ser
        130                 135                 140

ggc tcc act ggc atc ctg tct gtc att ggc gtt atg ttg gca cca ttt    660
Gly Ser Thr Gly Ile Leu Ser Val Ile Gly Val Met Leu Ala Pro Phe
145                 150                 155                 160

aca gca ggg ctg agc ctg agc att act gca gct ggg gta ggg ctg gga    708
Thr Ala Gly Leu Ser Leu Ser Ile Thr Ala Ala Gly Val Gly Leu Gly
                165                 170                 175

ata gca tct gcc acg gct ggg atc gcc tcc agc atc gtg gag aac aca    756
Ile Ala Ser Ala Thr Ala Gly Ile Ala Ser Ser Ile Val Glu Asn Thr
            180                 185                 190

tac aca agg tca gca gaa ctc aca gcc agc agg ctg act gca acc agc    804
Tyr Thr Arg Ser Ala Glu Leu Thr Ala Ser Arg Leu Thr Ala Thr Ser
            195                 200                 205

act gac caa ttg gag gca tta agg gac att ctg cat gac atc aca ccc    852
Thr Asp Gln Leu Glu Ala Leu Arg Asp Ile Leu His Asp Ile Thr Pro
        210                 215                 220

aat gtg ctt tcc ttt gca ctt gat ttt gac gaa gcc aca aaa atg att    900
Asn Val Leu Ser Phe Ala Leu Asp Phe Asp Glu Ala Thr Lys Met Ile
        225                 230                 235                 240

gcg aat gat gtc cat aca ctc agg aga tct aaa gcc act gtt gga cgc    948
Ala Asn Asp Val His Thr Leu Arg Arg Ser Lys Ala Thr Val Gly Arg
                245                 250                 255

cct ttg att gct tgg cga tat gta cct ata aat gtt gtt gag aca ctg    996
Pro Leu Ile Ala Trp Arg Tyr Val Pro Ile Asn Val Val Glu Thr Leu
            260                 265                 270

aga aca cgt ggg gcc ccc acc cgg ata gtg aga aaa gta gcc cgg aac    1044
Arg Thr Arg Gly Ala Pro Thr Arg Ile Val Arg Lys Val Ala Arg Asn
            275                 280                 285

ctg ggc aag gcc act tca ggt gtc ctt gtt gtg ctg gat gta gtc aac    1092
Leu Gly Lys Ala Thr Ser Gly Val Leu Val Val Leu Asp Val Val Asn
        290                 295                 300

ctt gtg caa gac tca ctg gac ttg cac aag ggg gca aaa tcc gag tct    1140
Leu Val Gln Asp Ser Leu Asp Leu His Lys Gly Ala Lys Ser Glu Ser
305                 310                 315                 320

gct gag tcgctgaggc agtgggctca ggagctggag gagaatctca atgagctcac    1196
Ala Glu

ccatatccat cagagtctaa aagcaggcta ggcccaattg ttgcgggaag tcagggaccc    1256
```

```
caaacggagg gactggctga agccatggca gaagaacgtg gattgtgaag atttcatgga    1316

catttattag ttccccaaat taatactttt ataatttcct atgcctgtct ttaccgcaat    1376

ctctaaacac caattgtgaa gatttcatgg acacttatca cttccccaa               1425
```

<210> 4
<211> 322
<212> PRT
<213> Homo sapiens

<400> 4

Met Gly Ser Trp Val Gln Leu Ile Thr Ser Val Gly Val Gln Gln Asn
1   5   10   15

His Pro Gly Trp Thr Val Ala Gly Gln Phe Gln Glu Lys Lys Arg Phe
                20   25   30

Thr Glu Glu Val Ile Glu Tyr Phe Gln Lys Lys Val Ser Pro Val His
        35   40   45

Leu Lys Ile Leu Leu Thr Ser Asp Glu Ala Trp Lys Arg Phe Val Arg
    50   55   60

Val Ala Glu Leu Pro Arg Glu Glu Ala Asp Ala Leu Tyr Glu Ala Leu
65   70   75   80

Lys Asn Leu Thr Pro Tyr Val Ala Ile Glu Asp Lys Asp Met Gln Gln
                85   90   95

Lys Glu Gln Gln Phe Arg Glu Trp Phe Leu Lys Glu Phe Pro Gln Ile
                100   105   110

Arg Trp Lys Ile Gln Glu Ser Ile Glu Arg Leu Arg Val Ile Ala Asn
        115   120   125

Glu Ile Glu Lys Val His Arg Gly Cys Val Ile Ala Asn Val Val Ser
    130   135   140

Gly Ser Thr Gly Ile Leu Ser Val Ile Gly Val Met Leu Ala Pro Phe
145   150   155   160

Thr Ala Gly Leu Ser Leu Ser Ile Thr Ala Ala Gly Val Gly Leu Gly
                165   170   175

Ile Ala Ser Ala Thr Ala Gly Ile Ala Ser Ser Ile Val Glu Asn Thr
                180   185   190

Tyr Thr Arg Ser Ala Glu Leu Thr Ala Ser Arg Leu Thr Ala Thr Ser

```
            195                   200                   205
Thr Asp Gln Leu Glu Ala Leu Arg Asp Ile Leu His Asp Ile Thr Pro
    210                   215                   220

Asn Val Leu Ser Phe Ala Leu Asp Phe Asp Glu Ala Thr Lys Met Ile
225                   230                   235                   240

Ala Asn Asp Val His Thr Leu Arg Arg Ser Lys Ala Thr Val Gly Arg
                  245                   250                   255

Pro Leu Ile Ala Trp Arg Tyr Val Pro Ile Asn Val Val Glu Thr Leu
                  260                   265                   270

Arg Thr Arg Gly Ala Pro Thr Arg Ile Val Arg Lys Val Ala Arg Asn
              275                   280                   285

Leu Gly Lys Ala Thr Ser Gly Val Leu Val Val Leu Asp Val Val Asn
    290                   295                   300

Leu Val Gln Asp Ser Leu Asp Leu His Lys Gly Ala Lys Ser Glu Ser
305                   310                   315                   320

Ala Glu


<210>  5
<211>  1931
<212>  DNA
<213>  Homo sapiens

<220>
<221>  CDS
<222>  (18)..(452)

<400>  5
gaagcttctc gaggacc atg gaa ctt gca ctg ctg tgt ggg ctg gtg gtg       50
                    Met Glu Leu Ala Leu Leu Cys Gly Leu Val Val
                    1               5                   10

atg gct ggt gtg att cca atc cag ggc ggg atc ctg aac ctg aac aag       98
Met Ala Gly Val Ile Pro Ile Gln Gly Gly Ile Leu Asn Leu Asn Lys
            15                  20                  25

atg gtc aag caa gtg act ggg aaa atg ccc atc ctc tcc tac tgg ccc      146
Met Val Lys Gln Val Thr Gly Lys Met Pro Ile Leu Ser Tyr Trp Pro
        30                  35                  40

tac ggc tgt cac tgc gga cta ggt ggc aga ggc caa ccc aaa gat gcc      194
Tyr Gly Cys His Cys Gly Leu Gly Gly Arg Gly Gln Pro Lys Asp Ala
    45                  50                  55

acg gac tgg tgc tgc cag acc cat gac tgc tgc tat gac cac ctg aag      242
Thr Asp Trp Cys Cys Gln Thr His Asp Cys Cys Tyr Asp His Leu Lys
```

```
60                        65                      70                        75
acc cag ggg tgc ggc atc tac aag gac tat tac aga tac aac ttt tcc        290
Thr Gln Gly Cys Gly Ile Tyr Lys Asp Tyr Tyr Arg Tyr Asn Phe Ser
                    80                  85                  90

cag ggg aac atc cac tgc tct gac aag gga agc tgg tgt gag cag cag        338
Gln Gly Asn Ile His Cys Ser Asp Lys Gly Ser Trp Cys Glu Gln Gln
                95                  100                 105

ctg tgt gcc tgt gac aag gag gtg gcc ttc tgc ctg aag cgc aac ctg        386
Leu Cys Ala Cys Asp Lys Glu Val Ala Phe Cys Leu Lys Arg Asn Leu
            110                 115                 120

gac acc tac cag aag cga ctg cgt ttc tac tgg cgg ccc cac tgc cgg        434
Asp Thr Tyr Gln Lys Arg Leu Arg Phe Tyr Trp Arg Pro His Cys Arg
        125                 130                 135

ggg cag acc cct ggg tgc tagaagccca caccctctac cctgttcctc              482
Gly Gln Thr Pro Gly Cys
140                 145

agcatggagc tctggcatcc ccacctcagt atctaacctg aaccagcctg gctttcaaa      542

cactccgggg ggaggtagtc ccagcctccc ccggaaccct ctaccaatgc cttctgacct     602

tctgaagctt tccgaatcct cccagttgag gcagtagctg tgtcctctga gggtggatgg     662

gaatcttggg agaagcccaa gcaaggggac cctcagaggt ggtgtttgga ccaaagcatc     722

ggggtggggg agggtctgtc cgctgtcccc cacctgctgg ccccccttgtc cttcctcacc    782

ccctccaata tagtctcgga gctacaaccg cagcagccac tataaagggc aatattgatc     842

tttctgtcca tgtggctcta tcttttaaaa cctcaaggcc ctccactgtc ctaagataaa     902

gcctctcata ggcactgggg accctgcaca gtctggccat gtgaccctct ccccaggcaa     962

gctctgaagt ccctgcaggt ggaggccatg cctgtcttaa actcagttgc atccctggtg    1022

cccaaagcaa caccagaacc aagaaggagc tccataaatc cttcttgggt gaagcctaga    1082

caaagccgcc aggtcttgtg gctccaggca ccagagcctt gagtactttc tcctgcctcc    1142

aggcattggc tcagggtgaa ttacaagggg ctactgaatg gctattactt tcatcacgac    1202

tgatcccac ctcctcaggg tcaaagggct actttctgga agtctcccca ggctgactcc      1262

ttctccctga ctgcaagggc tcactccctc ctccaagctc ccacaatgct tcatggctct    1322

gccgcttacc tagcttggcc tagagtggca aatggaactt ctctgatctc ccccaactag    1382

actggagccc ccgaaggatg gagaccatgt ctgtgccatc tctgtttccc ctgttttccc    1442

acatactagg tgctcaattc atgcctgtga atggcgtgag cccataatgg atacacagag    1502

gttgcagcag atggtgtggg tacctcaccc agatatcttc caggcccaag gccctctcc    1562

ctgagtgagg ccaggtgttg gcagccaact gctccaatct gcctccttcc cctaaatact    1622

gccctggtct agtgggagct gccttccccc tgccccacct ctcccaccaa gaggccacct    1682

gtcactcatg gccaggagag tgacaccatg gagggtacaa ttgccagctc ccccgtgtct    1742
```

```
gtgcagcatt gtctgggttg aatgacactc tcaaattgtt cctgggatcg ggctgaggcc    1802

aggcctctcc tggaaccacc tctctgcttg gtctgacccc ttggcctatc cagttttcct    1862

ggttccctca caggtttctc cagaaagtac tccctcagta aagcatttgc acaagaaaaa    1922

aaaaaaaaaa                                                           1931


<210>  6
<211>  145
<212>  PRT
<213>  Homo sapiens

<400>  6

Met Glu Leu Ala Leu Leu Cys Gly Leu Val Val Met Ala Gly Val Ile
1                5                   10                  15


Pro Ile Gln Gly Gly Ile Leu Asn Leu Asn Lys Met Val Lys Gln Val
             20                  25                  30


Thr Gly Lys Met Pro Ile Leu Ser Tyr Trp Pro Tyr Gly Cys His Cys
         35                  40                  45


Gly Leu Gly Gly Arg Gly Gln Pro Lys Asp Ala Thr Asp Trp Cys Cys
     50                  55                  60


Gln Thr His Asp Cys Cys Tyr Asp His Leu Lys Thr Gln Gly Cys Gly
65                  70                  75                  80


Ile Tyr Lys Asp Tyr Tyr Arg Tyr Asn Phe Ser Gln Gly Asn Ile His
                 85                  90                  95


Cys Ser Asp Lys Gly Ser Trp Cys Glu Gln Gln Leu Cys Ala Cys Asp
                 100                 105                 110


Lys Glu Val Ala Phe Cys Leu Lys Arg Asn Leu Asp Thr Tyr Gln Lys
             115                 120                 125


Arg Leu Arg Phe Tyr Trp Arg Pro His Cys Arg Gly Gln Thr Pro Gly
     130                 135                 140


Cys
145


<210>  7
<211>  1840
<212>  DNA
<213>  Homo sapiens

<220>
<221>  CDS
```

<222>   (140)..(1840)

<400>   7
tcccgggtcg acgatttctt cctgatccca cagcatcgca gagctcggga ggcacagctc   60

acagacacag gaaacacagg actgctattc tgctctcctg cccacggtga tctggtgcca   120

gctggtggaa cagtgggtg atg gcg tcc ctg ctg caa gac cag ctg acc act   172
                       Met Ala Ser Leu Leu Gln Asp Gln Leu Thr Thr
                        1   5   10

gat cag gac ttg ctg ctg atg cag gaa ggc atg ccg atg cgc aag gtg   220
Asp Gln Asp Leu Leu Leu Met Gln Glu Gly Met Pro Met Arg Lys Val
                15   20   25

agg tcc aaa agc tgg aag aag cta aga tac ttc aga ctt cag aat gac   268
Arg Ser Lys Ser Trp Lys Lys Leu Arg Tyr Phe Arg Leu Gln Asn Asp
            30   35   40

ggc atg aca gtc tgg cat gca cgg cag gca agg ggc agt gcc aag ccc   316
Gly Met Thr Val Trp His Ala Arg Gln Ala Arg Gly Ser Ala Lys Pro
        45   50   55

agc ttc tca atc tct gat gtg gag aca ata cgt aat ggc cat gat tcc   364
Ser Phe Ser Ile Ser Asp Val Glu Thr Ile Arg Asn Gly His Asp Ser
60   65   70   75

gag ttg ctg cgt agc ctg gca gag gag ctc ccc ctg gag cag ggc ttc   412
Glu Leu Leu Arg Ser Leu Ala Glu Glu Leu Pro Leu Glu Gln Gly Phe
                80   85   90

acc att gtc ttc cat ggc cgc cgc tcc aac ctg gac ctg atg gcc aac   460
Thr Ile Val Phe His Gly Arg Arg Ser Asn Leu Asp Leu Met Ala Asn
                95   100   105

agt gtt gag gag gcc cag ata tgg atg cga ggg ctc cag ctg ttg gtg   508
Ser Val Glu Glu Ala Gln Ile Trp Met Arg Gly Leu Gln Leu Leu Val
            110   115   120

gat ctt gtc acc agc atg gac cat cag gag cgc ctg gac caa tgg ctg   556
Asp Leu Val Thr Ser Met Asp His Gln Glu Arg Leu Asp Gln Trp Leu
        125   130   135

agc gat tgg ttt caa cgt gga gac aaa aat cag gat ggt aag atg agt   604
Ser Asp Trp Phe Gln Arg Gly Asp Lys Asn Gln Asp Gly Lys Met Ser
140   145   150   155

ttc caa gaa gtt cag cgg tta ttg cac cta atg aat gtg gaa atg gac   652
Phe Gln Glu Val Gln Arg Leu Leu His Leu Met Asn Val Glu Met Asp
                160   165   170

caa gaa tat gcc ttc agt ctt ttt cag gca gca gac acg tcc cag tct   700
Gln Glu Tyr Ala Phe Ser Leu Phe Gln Ala Ala Asp Thr Ser Gln Ser
                175   180   185

gga acc ctg gaa gga gaa gaa ttc gta cag ttc tat aag gca ttg act   748
Gly Thr Leu Glu Gly Glu Glu Phe Val Gln Phe Tyr Lys Ala Leu Thr
            190   195   200

aaa cgt gct gag gtg cag gaa ctg ttt gaa agt ttt tca gct gat ggg   796
Lys Arg Ala Glu Val Gln Glu Leu Phe Glu Ser Phe Ser Ala Asp Gly
        205   210   215

```
cag aag ctg act ctg ctg gaa ttt ttg gat ttc ctc caa gag gag cag      844
Gln Lys Leu Thr Leu Leu Glu Phe Leu Asp Phe Leu Gln Glu Glu Gln
220                 225                 230                 235

aag gag aga gac tgc acc tct gag ctt gct ctg gaa ctc att gac cgc      892
Lys Glu Arg Asp Cys Thr Ser Glu Leu Ala Leu Glu Leu Ile Asp Arg
                240                 245                 250

tat gaa cct tca gac agt ggc aaa ctg cgg cat gtg ccg agt atg gat      940
Tyr Glu Pro Ser Asp Ser Gly Lys Leu Arg His Val Pro Ser Met Asp
                255                 260                 265

ggc ttc ctc agc tac ctc tgc tct aag gat gga gac atc ttc aac cca      988
Gly Phe Leu Ser Tyr Leu Cys Ser Lys Asp Gly Asp Ile Phe Asn Pro
            270                 275                 280

gcc tgc ctc ccc atc tat cag gat atg act caa ccc ctg aac cac tac     1036
Ala Cys Leu Pro Ile Tyr Gln Asp Met Thr Gln Pro Leu Asn His Tyr
        285                 290                 295

ttc atc tgc tct tct cat aac acc tac cta gtg ggg gac cag ctt tgc     1084
Phe Ile Cys Ser Ser His Asn Thr Tyr Leu Val Gly Asp Gln Leu Cys
    300                 305                 310                 315

ggc cag agc agc gtc gag gga tat ata cgg gcc ctg aag cgg ggg tgc     1132
Gly Gln Ser Ser Val Glu Gly Tyr Ile Arg Ala Leu Lys Arg Gly Cys
                320                 325                 330

cgc tgc gtg gag gtg gat gta tgg gat gga cct agc ggg gaa cct gtc     1180
Arg Cys Val Glu Val Asp Val Trp Asp Gly Pro Ser Gly Glu Pro Val
                335                 340                 345

gtt tac cac gga cac acc ctg acc tcc cgc atc ctg ttc aaa gat gtc     1228
Val Tyr His Gly His Thr Leu Thr Ser Arg Ile Leu Phe Lys Asp Val
            350                 355                 360

gtg gcc aca gta gca cag tat gcc ttc cag aca tca gac tac cca gtc     1276
Val Ala Thr Val Ala Gln Tyr Ala Phe Gln Thr Ser Asp Tyr Pro Val
        365                 370                 375

atc ttg tcc ctg gag acc cac tgc agc tgg gag cag cag cag acc atg     1324
Ile Leu Ser Leu Glu Thr His Cys Ser Trp Glu Gln Gln Gln Thr Met
380                 385                 390                 395

gcc cgt cat ctg act gag atc ctg ggg gag cag ctg ctg agc acc acc     1372
Ala Arg His Leu Thr Glu Ile Leu Gly Glu Gln Leu Leu Ser Thr Thr
                400                 405                 410

ttg gat ggg gtg ctg ccc act cag ctg ccc tcg cct gag gag ctt cgg     1420
Leu Asp Gly Val Leu Pro Thr Gln Leu Pro Ser Pro Glu Glu Leu Arg
            415                 420                 425

agg aag atc ctg gtg aag ggg aag aag tta aca ctt gag gaa gac ctg     1468
Arg Lys Ile Leu Val Lys Gly Lys Lys Leu Thr Leu Glu Glu Asp Leu
            430                 435                 440

gaa tat gag gaa gag gaa gca gaa cct gag ttg gaa gag tca gaa ttg     1516
Glu Tyr Glu Glu Glu Glu Ala Glu Pro Glu Leu Glu Glu Ser Glu Leu
        445                 450                 455

gcg ctg gag tcc cag ttt gag act gag cct gag ccc cag gag cag aac     1564
Ala Leu Glu Ser Gln Phe Glu Thr Glu Pro Glu Pro Gln Glu Gln Asn
460                 465                 470                 475
```

```
ctt cag aat aag gac aaa aag aag aaa tcc aag ccc atc ttg tgt cca     1612
Leu Gln Asn Lys Asp Lys Lys Lys Lys Ser Lys Pro Ile Leu Cys Pro
                480             485             490

gcc ctc tct tcc ctg gtt atc tac ttg aag tct gtc tca ttc cgc agc     1660
Ala Leu Ser Ser Leu Val Ile Tyr Leu Lys Ser Val Ser Phe Arg Ser
            495             500             505

ttc aca cat tca aag gag cac tac cac ttc tac gag ata tca tct ttc     1708
Phe Thr His Ser Lys Glu His Tyr His Phe Tyr Glu Ile Ser Ser Phe
            510             515             520

tct gaa acc aag gcc aag cgc ctc atc aag gag gct ggc aat gag ttt     1756
Ser Glu Thr Lys Ala Lys Arg Leu Ile Lys Glu Ala Gly Asn Glu Phe
        525             530             535

gtg cag cac aat act cgg cag tta agc cgt gtg tat ccc agc ggc ctg     1804
Val Gln His Asn Thr Arg Gln Leu Ser Arg Val Tyr Pro Ser Gly Leu
540             545             550             555

agg aca ggc tct tcc atc tac aac ccg cag gga tac                     1840
Arg Thr Gly Ser Ser Ile Tyr Asn Pro Gln Gly Tyr
                560             565
```

<210> 8
<211> 567
<212> PRT
<213> Homo sapiens

<400> 8

```
Met Ala Ser Leu Leu Gln Asp Gln Leu Thr Thr Asp Gln Asp Leu Leu
1               5               10              15

Leu Met Gln Glu Gly Met Pro Met Arg Lys Val Arg Ser Lys Ser Trp
            20              25              30

Lys Lys Leu Arg Tyr Phe Arg Leu Gln Asn Asp Gly Met Thr Val Trp
        35              40              45

His Ala Arg Gln Ala Arg Gly Ser Ala Lys Pro Ser Phe Ser Ile Ser
        50              55              60

Asp Val Glu Thr Ile Arg Asn Gly His Asp Ser Glu Leu Leu Arg Ser
65              70              75              80

Leu Ala Glu Glu Leu Pro Leu Glu Gln Gly Phe Thr Ile Val Phe His
            85              90              95

Gly Arg Arg Ser Asn Leu Asp Leu Met Ala Asn Ser Val Glu Glu Ala
            100             105             110

Gln Ile Trp Met Arg Gly Leu Gln Leu Leu Val Asp Leu Val Thr Ser
        115             120             125
```

Met Asp His Gln Glu Arg Leu Asp Gln Trp Leu Ser Asp Trp Phe Gln
    130   135   140

Arg Gly Asp Lys Asn Gln Asp Gly Lys Met Ser Phe Gln Glu Val Gln
145   150   155   160

Arg Leu Leu His Leu Met Asn Val Glu Met Asp Gln Glu Tyr Ala Phe
           165   170   175

Ser Leu Phe Gln Ala Ala Asp Thr Ser Gln Ser Gly Thr Leu Glu Gly
        180   185   190

Glu Glu Phe Val Gln Phe Tyr Lys Ala Leu Thr Lys Arg Ala Glu Val
      195   200   205

Gln Glu Leu Phe Glu Ser Phe Ser Ala Asp Gly Gln Lys Leu Thr Leu
    210   215   220

Leu Glu Phe Leu Asp Phe Leu Gln Glu Glu Gln Lys Glu Arg Asp Cys
225   230   235   240

Thr Ser Glu Leu Ala Leu Glu Leu Ile Asp Arg Tyr Glu Pro Ser Asp
        245   250   255

Ser Gly Lys Leu Arg His Val Pro Ser Met Asp Gly Phe Leu Ser Tyr
        260   265   270

Leu Cys Ser Lys Asp Gly Asp Ile Phe Asn Pro Ala Cys Leu Pro Ile
     275   280   285

Tyr Gln Asp Met Thr Gln Pro Leu Asn His Tyr Phe Ile Cys Ser Ser
    290   295   300

His Asn Thr Tyr Leu Val Gly Asp Gln Leu Cys Gly Gln Ser Ser Val
305   310   315   320

Glu Gly Tyr Ile Arg Ala Leu Lys Arg Gly Cys Arg Cys Val Glu Val
        325   330   335

Asp Val Trp Asp Gly Pro Ser Gly Glu Pro Val Val Tyr His Gly His
        340   345   350

Thr Leu Thr Ser Arg Ile Leu Phe Lys Asp Val Val Ala Thr Val Ala
     355   360   365

Gln Tyr Ala Phe Gln Thr Ser Asp Tyr Pro Val Ile Leu Ser Leu Glu
    370   375   380

```
Thr His Cys Ser Trp Glu Gln Gln Gln Thr Met Ala Arg His Leu Thr
385                 390                 395                 400

Glu Ile Leu Gly Glu Gln Leu Leu Ser Thr Thr Leu Asp Gly Val Leu
                405                 410                 415

Pro Thr Gln Leu Pro Ser Pro Glu Glu Leu Arg Arg Lys Ile Leu Val
            420                 425                 430

Lys Gly Lys Lys Leu Thr Leu Glu Glu Asp Leu Glu Tyr Glu Glu Glu
            435                 440                 445

Glu Ala Glu Pro Glu Leu Glu Glu Ser Glu Leu Ala Leu Glu Ser Gln
    450                 455                 460

Phe Glu Thr Glu Pro Glu Pro Gln Glu Gln Asn Leu Gln Asn Lys Asp
465                 470                 475                 480

Lys Lys Lys Lys Ser Lys Pro Ile Leu Cys Pro Ala Leu Ser Ser Leu
                485                 490                 495

Val Ile Tyr Leu Lys Ser Val Ser Phe Arg Ser Phe Thr His Ser Lys
            500                 505                 510

Glu His Tyr His Phe Tyr Glu Ile Ser Ser Phe Ser Glu Thr Lys Ala
            515                 520                 525

Lys Arg Leu Ile Lys Glu Ala Gly Asn Glu Phe Val Gln His Asn Thr
    530                 535                 540

Arg Gln Leu Ser Arg Val Tyr Pro Ser Gly Leu Arg Thr Gly Ser Ser
545                 550                 555                 560

Ile Tyr Asn Pro Gln Gly Tyr
                565
```

```
<210>   9
<211>   1384
<212>   DNA
<213>   Homo sapiens

<400>   9
ccaactaagc ttgcctaatt tgcttcagaa ttggaagagg gaattgcagc aggaaaatat      60

gtgaagagtt tttaaaccca caaattcttc ttactttaga attagttgtt acattggcag     120

gaaaaaataa atgcagatgt tggaccatgt tggaaacctt gtcaagacag tggattgtct     180

cacacagaat ggaaatgtgg cttctgattc tggtggcgta tatgttccag agaaatgtga     240

attcagtaca tatgccaact aaagctgtgg acccagaagc attcatgaat attagtgaaa     300
```

```
tcatccaaca tcaaggctat ccctgtgagg aatatgaagt cgcaactgaa gatgggtata      360

tcctttctgt taacaggatt cctcgaggcc tagtgcaacc taagaagaca ggttccaggc      420

ctgtggtgtt actgcagcat ggcctagttg gaggtgctag caactggatt tccaacctgc      480

ccaacaatag cctgggcttc attctggcag atgctggttt tgacgtgtgg atgggggaaca     540

gcaggggaaa cgcctggtct cgaaaacaca agacactctc catagaccaa gatgagttct      600

gggctttcag ttatgatgag atggctaggt ttgaccttcc tgcagtgata aactttattt      660

tgcagaaaac gggccaggaa aagatctatt atgtcggcta ttcacagggc accaccatgg      720

gctttattgc atcttccacc atgccagagc tggctcagaa aatcaaaatg tattttgctt      780

tagcacccat agccactgtt aagcatgcaa aaagccccgg gaccaaattt ttgttgctgc      840

cagatatgat gatcaaggga ttgtttggca aaaaagaatt tctgtatcag accagatttc      900

tcagacaact tgttatttac ctttgtggcc aggtgattct tgatcagatt tgtagtaata      960

tcatgttact tctgggtgga ttcaacacca acaatatgaa catgagccga gcaagtgtat     1020

atgctgccca cactcttgct ggaacatctg tgcaaaatat tctacactgg agccaggcag     1080

tgaattctgg tgaactccgg gcatttgact ggggggagtga gaccaaaaat ctggaaaaat     1140

gcaatcagcc aactcctgta aggtacagag tcagagatat gacggtccct cagcaatgt      1200

ggacaggagg tcaggactgg ctttcaaatc cagaagacgt gaaaatgctg ctctctgagg     1260

tgaccaacct catctaccat aagaatattc ctgaatgggc tcatgtggat ttcatctggg     1320

gtttggatgc tcctcaccgt atgtacaatg aaatcatcca tctgatgcag caggaggaga     1380

ccat                                                                  1384
```

<210> 10
<211> 1915
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (180)..(1046)

<400> 10
```
ccgcacgagg gaaagaacat taggaatgcc ttttagtgcc ttgcttcctg aactagctca       60

cagtagcccg gcggcccagg gcaatccgac cacatttcac tctcaccgct gtaggaatcc      120

agatgcaggc caagtacagc agcacgaggg acatgctgga tgatgatggg gacaccacc       179
```
```
atg agc ctg cat tct caa gcc tct gcc aca act cgg cat cca gag ccc        227
Met Ser Leu His Ser Gln Ala Ser Ala Thr Thr Arg His Pro Glu Pro
1               5                   10                  15
```
```
cgg cgc aca gag cac agg gct ccc tct tca acg tgg cga cca gtg gcc        275
Arg Arg Thr Glu His Arg Ala Pro Ser Ser Thr Trp Arg Pro Val Ala
        20                  25                  30
```

```
ctg acc ctg ctg act ttg tgc ttg gtg ctg ctg ata ggg ctg gca gcc     323
Leu Thr Leu Leu Thr Leu Cys Leu Val Leu Leu Ile Gly Leu Ala Ala
        35                  40                  45

ctg ggg ctt ttg ttt ttt cag tac tac cag ctc tcc aat act ggt caa     371
Leu Gly Leu Leu Phe Phe Gln Tyr Tyr Gln Leu Ser Asn Thr Gly Gln
    50                  55                  60

gac acc att tct caa atg gaa gaa aga tta gga aat acg tcc caa gag     419
Asp Thr Ile Ser Gln Met Glu Glu Arg Leu Gly Asn Thr Ser Gln Glu
65                  70                  75                  80

ttg caa tct ctt caa gtc cag aat ata aag ctt gca gga agt ctg cag     467
Leu Gln Ser Leu Gln Val Gln Asn Ile Lys Leu Ala Gly Ser Leu Gln
                    85                  90                  95

cat gtg gct gaa aaa ctc tgt cgt gag ctg tat aac aaa gct gga ggc     515
His Val Ala Glu Lys Leu Cys Arg Glu Leu Tyr Asn Lys Ala Gly Gly
            100                 105                 110

tat aca aga aac atg gtg cca gca tct gct tct tct gag agc ctc agg     563
Tyr Thr Arg Asn Met Val Pro Ala Ser Ala Ser Ser Glu Ser Leu Arg
        115                 120                 125

cag ctt cca cac atg ggg gaa agt gca gca gca cac agg tgc agc cct     611
Gln Leu Pro His Met Gly Glu Ser Ala Ala Ala His Arg Cys Ser Pro
    130                 135                 140

tgt aca gaa caa tgg aaa tgg cat gga gac aat tgc tac cag ttc tat     659
Cys Thr Glu Gln Trp Lys Trp His Gly Asp Asn Cys Tyr Gln Phe Tyr
145                 150                 155                 160

aaa gac agc aaa agt tgg gag gac tgt aaa tat ttc tgc ctt agt gaa     707
Lys Asp Ser Lys Ser Trp Glu Asp Cys Lys Tyr Phe Cys Leu Ser Glu
                165                 170                 175

aac tct acc atg ctg aag ata aac aaa caa gaa gac ctg gaa ttt gcc     755
Asn Ser Thr Met Leu Lys Ile Asn Lys Gln Glu Asp Leu Glu Phe Ala
            180                 185                 190

gcg tct cag agc tac tct gag ttt ttc tac tct tat tgg aca ggg ctt     803
Ala Ser Gln Ser Tyr Ser Glu Phe Phe Tyr Ser Tyr Trp Thr Gly Leu
        195                 200                 205

ttg cgc cct gac agt ggc aag gcc tgg ctg tgg atg gat gga acc cct     851
Leu Arg Pro Asp Ser Gly Lys Ala Trp Leu Trp Met Asp Gly Thr Pro
    210                 215                 220

ttc act tct gaa ctg ttc cat att ata ata gat gtc acc agc cca aga     899
Phe Thr Ser Glu Leu Phe His Ile Ile Ile Asp Val Thr Ser Pro Arg
225                 230                 235                 240

agc aga gac tgt gtg gcc atc ctt aat ggg atg atc ttc tca aag gac     947
Ser Arg Asp Cys Val Ala Ile Leu Asn Gly Met Ile Phe Ser Lys Asp
                245                 250                 255

tgc aaa gaa ttg aag cgt tgt gtc tgt gag aga agg gca gga atg gtg     995
Cys Lys Glu Leu Lys Arg Cys Val Cys Glu Arg Arg Ala Gly Met Val
            260                 265                 270

aag cca gag agc ctc cat gtc ccc cct gaa aca tta ggc gaa ggt gac    1043
Lys Pro Glu Ser Leu His Val Pro Pro Glu Thr Leu Gly Glu Gly Asp
        275                 280                 285
```

```
tga ttcgccctct gcaactacaa atagcagagt gagccaggcg gtgccaaagc        1096

aagggctagt tgagacattg ggaaatggaa cataatcagg aaagactatc tctctgacta   1156

gtacaaaatg ggttctcgtg tttcctgttc aggatcacca gcatttctga gcttgggttt   1216

atgcacgtat ttaacagtca caagagagtc tatttacatg ccaccaacca acctcagaaa   1276

cccataatgt catctgcctt cttggcttag agataacttt tagctctctt tcttctcaat   1336

gtctaatatc acctccctgt tttcatgtct tccttacact tggtggaata agaaactttt   1396

tgaagtagag gaaatacatt gaggtaacat ccttttctct gacagtcaag tagtccatca   1456

gaaattggca gtcacttccc agattgtacc agcaaataca caaggaattc tttttgtttg   1516

tttcagttca tactagtccc ttcccaatcc atcagtaaag accccatctg ccttgtccat   1576

gccgtttccc aacagggatg tcacttgata tgagaatctc aaatctcaat gccttataag   1636

cattccttcc tgtgtccatt aagactctga taattgtctc ccctccatag gaatttctcc   1696

caggaaagaa atatatcccc atctccgttt catatcagaa ctaccgtccc cgatattccc   1756

ttcagagaga ttaaagacca gaaaaaaggg gggctttttt tttgcacctg taatagtttc   1816

cggtccttttt ttttttcctt gacccctttt ttttcccttc cgggggtgga gggtttatta   1876

taattaaagg gaataccggg gaaaaaaaa aaaaagggg                          1915
```

<210> 11
<211> 288
<212> PRT
<213> Homo sapiens

<400> 11

```
Met Ser Leu His Ser Gln Ala Ser Ala Thr Thr Arg His Pro Glu Pro
1               5                   10                  15

Arg Arg Thr Glu His Arg Ala Pro Ser Ser Thr Trp Arg Pro Val Ala
            20                  25                  30

Leu Thr Leu Leu Thr Leu Cys Leu Val Leu Leu Ile Gly Leu Ala Ala
        35                  40                  45

Leu Gly Leu Leu Phe Phe Gln Tyr Tyr Gln Leu Ser Asn Thr Gly Gln
    50                  55                  60

Asp Thr Ile Ser Gln Met Glu Glu Arg Leu Gly Asn Thr Ser Gln Glu
65                  70                  75                  80

Leu Gln Ser Leu Gln Val Gln Asn Ile Lys Leu Ala Gly Ser Leu Gln
                85                  90                  95

His Val Ala Glu Lys Leu Cys Arg Glu Leu Tyr Asn Lys Ala Gly Gly
```

```
                                                100                            105                          110
         Tyr Thr Arg Asn Met Val Pro Ala Ser Ala Ser Ser Glu Ser Leu Arg
                 115                      120                      125

         Gln Leu Pro His Met Gly Glu Ser Ala Ala Ala His Arg Cys Ser Pro
             130                      135                      140

         Cys Thr Glu Gln Trp Lys Trp His Gly Asp Asn Cys Tyr Gln Phe Tyr
         145                      150                      155                      160

         Lys Asp Ser Lys Ser Trp Glu Asp Cys Lys Tyr Phe Cys Leu Ser Glu
                             165                      170                      175

         Asn Ser Thr Met Leu Lys Ile Asn Lys Gln Glu Asp Leu Glu Phe Ala
                     180                      185                      190

         Ala Ser Gln Ser Tyr Ser Glu Phe Phe Tyr Ser Tyr Trp Thr Gly Leu
                 195                      200                      205

         Leu Arg Pro Asp Ser Gly Lys Ala Trp Leu Trp Met Asp Gly Thr Pro
             210                      215                      220

         Phe Thr Ser Glu Leu Phe His Ile Ile Ile Asp Val Thr Ser Pro Arg
         225                      230                      235                      240

         Ser Arg Asp Cys Val Ala Ile Leu Asn Gly Met Ile Phe Ser Lys Asp
                             245                      250                      255

         Cys Lys Glu Leu Lys Arg Cys Val Cys Glu Arg Arg Ala Gly Met Val
                     260                      265                      270

         Lys Pro Glu Ser Leu His Val Pro Pro Glu Thr Leu Gly Glu Gly Asp
                 275                      280                      285


         <210>   12
         <211>   2420
         <212>   DNA
         <213>   Homo sapiens

         <220>
         <221>   misc_feature
         <223>   n = a or c or g or t


         <220>
         <221>   CDS
         <222>   (200)..(2395)
         <223>   Xaa = Unknown or other
```

```
<400>  12
cgggaggaat ggaaggagaa ggcggaatgt gggagggctc agggggatgt gggagggacg      60

aacggagaag ggggagagag ggggtccag tctcccctgg ccgagcattt tttttttttg     120

gaagtcctag gactaatctc caggaccagc actcttctcc cagcccttag ggtcctgtcc     180

ggccaaggcc ttccctgcc atg cga cct gtc agt gtc tgg cag tgg agc ccc     232
                      Met Arg Pro Val Ser Val Trp Gln Trp Ser Pro
                       1               5                  10

tgg ggg ctg ctg ctg tgc ctg ctg tgc agt tcg tgc ttg ggg tct ccg     280
Trp Gly Leu Leu Leu Cys Leu Leu Cys Ser Ser Cys Leu Gly Ser Pro
                 15                  20                  25

tcc cct tcc acg ggc cct gag aag aag gcc ggg agc cag ggg ctt cgg     328
Ser Pro Ser Thr Gly Pro Glu Lys Lys Ala Gly Ser Gln Gly Leu Arg
             30                  35                  40

ttc cgc ctg gct ggc ttc ccc agg aag ccc tac gag ggc cgc gtg gag     376
Phe Arg Leu Ala Gly Phe Pro Arg Lys Pro Tyr Glu Gly Arg Val Glu
         45                  50                  55

ata cag cga gct ggt gaa tgg ggc acc atc tgc gat gat gac ttc acg     424
Ile Gln Arg Ala Gly Glu Trp Gly Thr Ile Cys Asp Asp Asp Phe Thr
60                  65                  70                  75

ctg cag gct gcc cac atc ctc tgc cgg gag ctg ggc ttc aca gag gcc     472
Leu Gln Ala Ala His Ile Leu Cys Arg Glu Leu Gly Phe Thr Glu Ala
                 80                  85                  90

aca ggc tgg acc cac agt gcc aaa tat ggc cct gga aca ggc cgc atc     520
Thr Gly Trp Thr His Ser Ala Lys Tyr Gly Pro Gly Thr Gly Arg Ile
                 95                 100                 105

tgg ctg gac aac ttg agc tgc agt ggg acc gag cag agt gtg act gaa     568
Trp Leu Asp Asn Leu Ser Cys Ser Gly Thr Glu Gln Ser Val Thr Glu
             110                 115                 120

tgt gcc tcc cgg ggc tgg ggg aac agt gac tgt acg cac gat gag gat     616
Cys Ala Ser Arg Gly Trp Gly Asn Ser Asp Cys Thr His Asp Glu Asp
         125                 130                 135

gct ggg gtc atc tgc aaa gac cag cgc ctc cct ggc ttc tcg gac tcc     664
Ala Gly Val Ile Cys Lys Asp Gln Arg Leu Pro Gly Phe Ser Asp Ser
140                 145                 150                 155

aat gtc att gag gta gag cat cac ctg caa gtg gag gag gtg cga att     712
Asn Val Ile Glu Val Glu His His Leu Gln Val Glu Glu Val Arg Ile
                 160                 165                 170

cga ccc gcc gtt ggg tgg ggc aga cga ccc ctg ccc gtg acg gag ggg     760
Arg Pro Ala Val Gly Trp Gly Arg Arg Pro Leu Pro Val Thr Glu Gly
             175                 180                 185

ctg gtg gaa gtc agg ctt cct gac ggc tgg tcg caa gtg tgc gac aaa     808
Leu Val Glu Val Arg Leu Pro Asp Gly Trp Ser Gln Val Cys Asp Lys
             190                 195                 200

ggc tgg agc gcc cac aac agc cat gtg gtc tgc ggg atg ctg ggc ttc     856
Gly Trp Ser Ala His Asn Ser His Val Val Cys Gly Met Leu Gly Phe
         205                 210                 215
```

```
ccc agc gaa aag agg gtc aac gcg gcc ttc tac agg ctg cta gcc caa    904
Pro Ser Glu Lys Arg Val Asn Ala Ala Phe Tyr Arg Leu Leu Ala Gln
220                 225                 230                 235

cgg cag caa cac tcc ttt ggt ctg cat ggg gtg gcg tgc gtg ggc acg    952
Arg Gln Gln His Ser Phe Gly Leu His Gly Val Ala Cys Val Gly Thr
                240                 245                 250

gag gcc cac ctc tcc ctc tgt tcc ctg gag ttc tat cgt gcc aat gac   1000
Glu Ala His Leu Ser Leu Cys Ser Leu Glu Phe Tyr Arg Ala Asn Asp
                255                 260                 265

acc gcc agg tgc cct ggg ggg ggc cct gca gtg gtg agc tgt gtg cca   1048
Thr Ala Arg Cys Pro Gly Gly Gly Pro Ala Val Val Ser Cys Val Pro
                270                 275                 280

ggc cct gtc tac gcg gca tcc agt ggc cag aag aag caa caa cag tcg   1096
Gly Pro Val Tyr Ala Ala Ser Ser Gly Gln Lys Lys Gln Gln Gln Ser
285                 290                 295

aag cct cag ggg gag gtc cgt gtc cgt cta aag ggc ggc gcc cac cct   1144
Lys Pro Gln Gly Glu Val Arg Val Arg Leu Lys Gly Gly Ala His Pro
300                 305                 310                 315

gga gag ggc cgg gta gaa gtc ctg aag gcc agc aca tgg ggc aca gtc   1192
Gly Glu Gly Arg Val Glu Val Leu Lys Ala Ser Thr Trp Gly Thr Val
                320                 325                 330

tgt tac cgc aag tgg gac ctg cat gca gcc agc gtg gtg tgt cgg gag   1240
Cys Tyr Arg Lys Trp Asp Leu His Ala Ala Ser Val Val Cys Arg Glu
                335                 340                 345

ctg ggc ttc ggg agt gct cga gaa gct ctg agt ggc gct cgc atg ggg   1288
Leu Gly Phe Gly Ser Ala Arg Glu Ala Leu Ser Gly Ala Arg Met Gly
                350                 355                 360

cag ggc atg ggt gct atc cac ctg agt gaa gtt cgc tgc tct gga cag   1336
Gln Gly Met Gly Ala Ile His Leu Ser Glu Val Arg Cys Ser Gly Gln
    365                 370                 375

gag ctc tcc ctc tgg aag tgc ccc cac aag aac atc aca gct gag gat   1384
Glu Leu Ser Leu Trp Lys Cys Pro His Lys Asn Ile Thr Ala Glu Asp
380                 385                 390                 395

tgt tca cat agc cag gat gcc ggg gtc cgg tgc aac cta cct tac act   1432
Cys Ser His Ser Gln Asp Ala Gly Val Arg Cys Asn Leu Pro Tyr Thr
                400                 405                 410

ggg gca gag acc agg gtc atc cat tct gtg tca cta cag atc cga ctc   1480
Gly Ala Glu Thr Arg Val Ile His Ser Val Ser Leu Gln Ile Arg Leu
                415                 420                 425

agt ggg ggc cgc agc caa cat gag ggg cga gtc gag gtg caa ata ggg   1528
Ser Gly Gly Arg Ser Gln His Glu Gly Arg Val Glu Val Gln Ile Gly
                430                 435                 440

gga cct ggg ccc ctt cgc tgg ggc ctc atc tgt ggg gat gac tgg ggg   1576
Gly Pro Gly Pro Leu Arg Trp Gly Leu Ile Cys Gly Asp Asp Trp Gly
    445                 450                 455

acc ctg gag gcc atg gtg gcc tgt agg caa ctg ggt ctg ggc tac gcc   1624
Thr Leu Glu Ala Met Val Ala Cys Arg Gln Leu Gly Leu Gly Tyr Ala
460                 465                 470                 475
```

```
aac cac ggc ctg cag gag acc tgg tac tgg gac tct ggg aat ata aca    1672
Asn His Gly Leu Gln Glu Thr Trp Tyr Trp Asp Ser Gly Asn Ile Thr
            480                 485                 490

gag gtg gtg atg agt gga gtg cgc tgc aca ggg act gag ctg tcc ctg    1720
Glu Val Val Met Ser Gly Val Arg Cys Thr Gly Thr Glu Leu Ser Leu
            495                 500                 505

gat cag tgt gcc cat cat ggc acc cac atc acc tgc aag agg aca ggg    1768
Asp Gln Cys Ala His His Gly Thr His Ile Thr Cys Lys Arg Thr Gly
            510                 515                 520

acc cgc ttc act gct gga gtc atc tgt tct gag gca tca gat ctg ttg    1816
Thr Arg Phe Thr Ala Gly Val Ile Cys Ser Glu Ala Ser Asp Leu Leu
    525                 530                 535

ctg cac tca gca ctg gtg cag gag acc gcc tac atc gaa gac cgg ccc    1864
Leu His Ser Ala Leu Val Gln Glu Thr Ala Tyr Ile Glu Asp Arg Pro
540                 545                 550                 555

ctg cat atg ttg tac tgt gct gcg gaa gag aac tgc ctg gcc agc tca    1912
Leu His Met Leu Tyr Cys Ala Ala Glu Glu Asn Cys Leu Ala Ser Ser
                560                 565                 570

gcc cgc tca gcc aac tgg ccc tat ggt cac cgg cgt ctg ctc cga ttc    1960
Ala Arg Ser Ala Asn Trp Pro Tyr Gly His Arg Arg Leu Leu Arg Phe
            575                 580                 585

tgc tcc cag atc cac aac ctg gga cga gct gac ttc agg ccc aag gct    2008
Cys Ser Gln Ile His Asn Leu Gly Arg Ala Asp Phe Arg Pro Lys Ala
            590                 595                 600

ggg cgc cac tcc tgg gtg tgg cac gag tgc cat ggg cat tac cac agc    2056
Gly Arg His Ser Trp Val Trp His Glu Cys His Gly His Tyr His Ser
            605                 610                 615

acg gac ttc ttc act cac tat gat atc ctc acc cca nat ggc acc aag    2104
Thr Asp Phe Phe Thr His Tyr Asp Ile Leu Thr Pro Xaa Gly Thr Lys
620                 625                 630                 635

gtg gct gag ggc cac aaa gct agt ttc tgt ctc gaa gac act gag tgt    2152
Val Ala Glu Gly His Lys Ala Ser Phe Cys Leu Glu Asp Thr Glu Cys
                640                 645                 650

cag gag gat gtc tcc aag cgg tat gag tgt gcc aac ttt gga gag caa    2200
Gln Glu Asp Val Ser Lys Arg Tyr Glu Cys Ala Asn Phe Gly Glu Gln
                655                 660                 665

ggc atc act gtg ggd tgc tgg gat ctc tac cgg cat gac att gac tgt    2248
Gly Ile Thr Val Xaa Cys Trp Asp Leu Tyr Arg His Asp Ile Asp Cys
            670                 675                 680

cag tgg att gac atc acg gat gtg aag cca gga aac tac att ctc cag    2296
Gln Trp Ile Asp Ile Thr Asp Val Lys Pro Gly Asn Tyr Ile Leu Gln
    685                 690                 695

gtt gtc atc aac cca aac ttt gaa gta gca gag agb gac ttt acc aac    2344
Val Val Ile Asn Pro Asn Phe Glu Val Ala Glu Xaa Asp Phe Thr Asn
700                 705                 710                 715

aat gca atg aaa tgt gca tgc aaa tat gat gga cat aga atc tgg gtg    2392
Asn Ala Met Lys Cys Ala Cys Lys Tyr Asp Gly His Arg Ile Trp Val
                720                 725                 730
```

```
cac macttgccac attggtgatg ccttc                                         2420
His
```

```
<210>  13
<211>  732
<212>  PRT
<213>  Homo sapiens

<220>
<221>  misc_feature
<223>  n = a or c or g or t

<400>  13
```

Met	Arg	Pro	Val	Ser	Val	Trp	Gln	Trp	Ser	Pro	Trp	Gly	Leu	Leu	Leu
1				5					10					15	

Cys	Leu	Leu	Cys	Ser	Ser	Cys	Leu	Gly	Ser	Pro	Ser	Pro	Ser	Thr	Gly
			20					25					30		

Pro	Glu	Lys	Lys	Ala	Gly	Ser	Gln	Gly	Leu	Arg	Phe	Arg	Leu	Ala	Gly
			35					40					45		

Phe	Pro	Arg	Lys	Pro	Tyr	Glu	Gly	Arg	Val	Glu	Ile	Gln	Arg	Ala	Gly
	50					55					60				

Glu	Trp	Gly	Thr	Ile	Cys	Asp	Asp	Asp	Phe	Thr	Leu	Gln	Ala	Ala	His
65					70					75					80

Ile	Leu	Cys	Arg	Glu	Leu	Gly	Phe	Thr	Glu	Ala	Thr	Gly	Trp	Thr	His
			85					90					95		

Ser	Ala	Lys	Tyr	Gly	Pro	Gly	Thr	Gly	Arg	Ile	Trp	Leu	Asp	Asn	Leu
			100					105					110		

Ser	Cys	Ser	Gly	Thr	Glu	Gln	Ser	Val	Thr	Glu	Cys	Ala	Ser	Arg	Gly
		115					120					125			

Trp	Gly	Asn	Ser	Asp	Cys	Thr	His	Asp	Glu	Asp	Ala	Gly	Val	Ile	Cys
	130					135					140				

Lys	Asp	Gln	Arg	Leu	Pro	Gly	Phe	Ser	Asp	Ser	Asn	Val	Ile	Glu	Val
145					150					155					160

Glu	His	His	Leu	Gln	Val	Glu	Glu	Val	Arg	Ile	Arg	Pro	Ala	Val	Gly
			165					170					175		

Trp	Gly	Arg	Arg	Pro	Leu	Pro	Val	Thr	Glu	Gly	Leu	Val	Glu	Val	Arg
		180					185					190			

Leu Pro Asp Gly Trp Ser Gln Val Cys Asp Lys Gly Trp Ser Ala His
    195   200   205

Asn Ser His Val Val Cys Gly Met Leu Gly Phe Pro Ser Glu Lys Arg
    210   215   220

Val Asn Ala Ala Phe Tyr Arg Leu Leu Ala Gln Arg Gln Gln His Ser
225   230   235   240

Phe Gly Leu His Gly Val Ala Cys Val Gly Thr Glu Ala His Leu Ser
               245   250   255

Leu Cys Ser Leu Glu Phe Tyr Arg Ala Asn Asp Thr Ala Arg Cys Pro
          260   265   270

Gly Gly Gly Pro Ala Val Val Ser Cys Val Pro Gly Pro Val Tyr Ala
       275   280   285

Ala Ser Ser Gly Gln Lys Lys Gln Gln Gln Ser Lys Pro Gln Gly Glu
    290   295   300

Val Arg Val Arg Leu Lys Gly Gly Ala His Pro Gly Glu Gly Arg Val
305   310   315   320

Glu Val Leu Lys Ala Ser Thr Trp Gly Thr Val Cys Tyr Arg Lys Trp
           325   330   335

Asp Leu His Ala Ala Ser Val Val Cys Arg Glu Leu Gly Phe Gly Ser
          340   345   350

Ala Arg Glu Ala Leu Ser Gly Ala Arg Met Gly Gln Gly Met Gly Ala
      355   360   365

Ile His Leu Ser Glu Val Arg Cys Ser Gly Gln Glu Leu Ser Leu Trp
      370   375   380

Lys Cys Pro His Lys Asn Ile Thr Ala Glu Asp Cys Ser His Ser Gln
385   390   395   400

Asp Ala Gly Val Arg Cys Asn Leu Pro Tyr Thr Gly Ala Glu Thr Arg
          405   410   415

Val Ile His Ser Val Ser Leu Gln Ile Arg Leu Ser Gly Gly Arg Ser
          420   425   430

Gln His Glu Gly Arg Val Glu Val Gln Ile Gly Gly Pro Gly Pro Leu
      435   440   445

```
Arg Trp Gly Leu Ile Cys Gly Asp Asp Trp Gly Thr Leu Glu Ala Met
    450             455             460

Val Ala Cys Arg Gln Leu Gly Leu Gly Tyr Ala Asn His Gly Leu Gln
465             470             475             480

Glu Thr Trp Tyr Trp Asp Ser Gly Asn Ile Thr Glu Val Val Met Ser
            485             490             495

Gly Val Arg Cys Thr Gly Thr Glu Leu Ser Leu Asp Gln Cys Ala His
        500             505             510

His Gly Thr His Ile Thr Cys Lys Arg Thr Gly Thr Arg Phe Thr Ala
        515             520             525

Gly Val Ile Cys Ser Glu Ala Ser Asp Leu Leu Leu His Ser Ala Leu
        530             535             540

Val Gln Glu Thr Ala Tyr Ile Glu Asp Arg Pro Leu His Met Leu Tyr
545             550             555             560

Cys Ala Ala Glu Glu Asn Cys Leu Ala Ser Ser Ala Arg Ser Ala Asn
            565             570             575

Trp Pro Tyr Gly His Arg Arg Leu Leu Arg Phe Cys Ser Gln Ile His
        580             585             590

Asn Leu Gly Arg Ala Asp Phe Arg Pro Lys Ala Gly Arg His Ser Trp
        595             600             605

Val Trp His Glu Cys His Gly His Tyr His Ser Thr Asp Phe Phe Thr
    610             615             620

His Tyr Asp Ile Leu Thr Pro Xaa Gly Thr Lys Val Ala Glu Gly His
625             630             635             640

Lys Ala Ser Phe Cys Leu Glu Asp Thr Glu Cys Gln Glu Asp Val Ser
            645             650             655

Lys Arg Tyr Glu Cys Ala Asn Phe Gly Glu Gln Gly Ile Thr Val Xaa
        660             665             670

Cys Trp Asp Leu Tyr Arg His Asp Ile Asp Cys Gln Trp Ile Asp Ile
        675             680             685

Thr Asp Val Lys Pro Gly Asn Tyr Ile Leu Gln Val Val Ile Asn Pro
    690             695             700
```

```
Asn Phe Glu Val Ala Glu Xaa Asp Phe Thr Asn Asn Ala Met Lys Cys
705                 710                 715                 720


Asn Cys Lys Tyr Asp Gly His Arg Ile Trp Val His
                725                 730


<210>   14
<211>   2066
<212>   DNA
<213>   Homo sapiens

<220>
<221>   CDS
<222>   (149)..(2065)

<400>   14
cacacgggcg cctcgctcgc gctcacacac gctctgcctc ctctctcccg cacgcgcgca      60

tccctccacc ttccacatcc tgctccaggc aggagaaggc tgactggctg gactcattga     120

gctgaagaat ttccagtgac atttgtaa atg acg ccg ctc gat tcc agg ctc        172
                                 Met Thr Pro Leu Asp Ser Arg Leu
                                 1                   5

caa gcg gcc cct gcc gcc gcc gcc gcc gcc ggg ccg aag gtg ccg ccg       220
Gln Ala Ala Pro Ala Ala Ala Ala Ala Ala Gly Pro Lys Val Pro Pro
    10                  15                  20

agc agt ctc cag cgc agg ctt cct tac cgg gcg acc aca atg tcc gag       268
Ser Ser Leu Gln Arg Arg Leu Pro Tyr Arg Ala Thr Thr Met Ser Glu
25                  30                  35                  40

ttt ctc ctc gcc tta ctc act ctc tcg gga tta ttg ccg att gcc agg       316
Phe Leu Leu Ala Leu Leu Thr Leu Ser Gly Leu Leu Pro Ile Ala Arg
                45                  50                  55

gtg ctg acc gtg gga gcc gac cga gat cag cag ttg tgt gat cct ggt       364
Val Leu Thr Val Gly Ala Asp Arg Asp Gln Gln Leu Cys Asp Pro Gly
            60                  65                  70

gaa ttt ctt tgc cac gat cac gtg act tgt gtc tcc cag agc tgg ctg       412
Glu Phe Leu Cys His Asp His Val Thr Cys Val Ser Gln Ser Trp Leu
        75                  80                  85

tgt gat ggg gac cct gac tgc cct gat gat tca gac gag tct tta gat       460
Cys Asp Gly Asp Pro Asp Cys Pro Asp Asp Ser Asp Glu Ser Leu Asp
        90                  95                  100

acc tgt ccc gag gag gta gaa atc aag tgc ccc ttg aat cac att gct       508
Thr Cys Pro Glu Glu Val Glu Ile Lys Cys Pro Leu Asn His Ile Ala
105                 110                 115                 120

tgc ctt ggc acc aac aaa tgt gtt cat tta tcc cag ctg tgc aat ggt       556
Cys Leu Gly Thr Asn Lys Cys Val His Leu Ser Gln Leu Cys Asn Gly
                125                 130                 135

gtc ttg gac tgc cca gat ggg tat gac gaa gga gta cat tgt cag gaa       604
Val Leu Asp Cys Pro Asp Gly Tyr Asp Glu Gly Val His Cys Gln Glu
            140                 145                 150

ctg tta tcc aat tgc caa cag ctg aat tgt cag tat aaa tgt aca atg       652
```

```
Leu Leu Ser Asn Cys Gln Gln Leu Asn Cys Gln Tyr Lys Cys Thr Met
        155                 160                 165

gtc aga aat agt aca aga tgt tac tgt gag gat gga ttc gaa ata aca      700
Val Arg Asn Ser Thr Arg Cys Tyr Cys Glu Asp Gly Phe Glu Ile Thr
    170                 175                 180

gaa gat ggg aga agc tgt aaa gat caa gat gaa tgt gct gtt tat ggt      748
Glu Asp Gly Arg Ser Cys Lys Asp Gln Asp Glu Cys Ala Val Tyr Gly
185                 190                 195                 200

aca ggc agc cag acc tgc aga aac aca cat gga tcc tac act tgc agt      796
Thr Gly Ser Gln Thr Cys Arg Asn Thr His Gly Ser Tyr Thr Cys Ser
                205                 210                 215

tgt gtg gaa ggc tac cta atg cag cca gac agc aga tct tgc aag gct      844
Cys Val Glu Gly Tyr Leu Met Gln Pro Asp Ser Arg Ser Cys Lys Ala
                220                 225                 230

aaa att gaa cct aca gat aga cca cgt ata cta tta att gca aat ttt      892
Lys Ile Glu Pro Thr Asp Arg Pro Arg Ile Leu Leu Ile Ala Asn Phe
            235                 240                 245

gaa tca att gag gtt ttc tat ctt aat gga agt aaa att gca act cta      940
Glu Ser Ile Glu Val Phe Tyr Leu Asn Gly Ser Lys Ile Ala Thr Leu
        250                 255                 260

agc tca gtc aat gga aat gaa att cat act ctg gat ttt att tat aat      988
Ser Ser Val Asn Gly Asn Glu Ile His Thr Leu Asp Phe Ile Tyr Asn
265                 270                 275                 280

gaa gat gtg att tgt tgg att gaa tca aga gaa tct tca aat caa ctc     1036
Glu Asp Val Ile Cys Trp Ile Glu Ser Arg Glu Ser Ser Asn Gln Leu
                285                 290                 295

aaa tgt atc cag ata aca aaa gca gga gga tta aca gat gaa tgg aca     1084
Lys Cys Ile Gln Ile Thr Lys Ala Gly Gly Leu Thr Asp Glu Trp Thr
                300                 305                 310

atc aat att ctt caa tcc ttc cac aat gtg caa caa atg gcg att gac     1132
Ile Asn Ile Leu Gln Ser Phe His Asn Val Gln Gln Met Ala Ile Asp
            315                 320                 325

tgg ctc act cga aat ctc tat ttt gtg gac cat gtc ggt gac cgg atc     1180
Trp Leu Thr Arg Asn Leu Tyr Phe Val Asp His Val Gly Asp Arg Ile
        330                 335                 340

ttt gtt tgt aat tcc aac ggt tct gta tgt gtc acc ctg att gat ctg     1228
Phe Val Cys Asn Ser Asn Gly Ser Val Cys Val Thr Leu Ile Asp Leu
345                 350                 355                 360

gag ctt cac aat cct aaa gca ata gca gta gat cca ata gca gga aaa     1276
Glu Leu His Asn Pro Lys Ala Ile Ala Val Asp Pro Ile Ala Gly Lys
                365                 370                 375

ctt ttc ttt act gac tac ggg aat gtc gcc aaa gtg gag aga tgt gac     1324
Leu Phe Phe Thr Asp Tyr Gly Asn Val Ala Lys Val Glu Arg Cys Asp
                380                 385                 390

atg gat ggg atg aac cga aca agg ata att gat tca aag aca gag cag     1372
Met Asp Gly Met Asn Arg Thr Arg Ile Ile Asp Ser Lys Thr Glu Gln
                395                 400                 405
```

```
cca gct gca ctg gca cta gac cta gtc aac aaa ttg gtt tac tgg gta          1420
Pro Ala Ala Leu Ala Leu Asp Leu Val Asn Lys Leu Val Tyr Trp Val
    410             415             420

gat ctt tac ttg gac tat gtg gga gta gtg gac tat caa gga aaa aat          1468
Asp Leu Tyr Leu Asp Tyr Val Gly Val Val Asp Tyr Gln Gly Lys Asn
425             430             435             440

aga cac act gtc att caa ggc aga caa gtc aga cat ctt tat ggt ata          1516
Arg His Thr Val Ile Gln Gly Arg Gln Val Arg His Leu Tyr Gly Ile
            445             450             455

act gtg ttt gaa gat tat ttg tat gca acc aat tct gat aac tac aat          1564
Thr Val Phe Glu Asp Tyr Leu Tyr Ala Thr Asn Ser Asp Asn Tyr Asn
        460             465             470

atc gta agg ata aac cga ttt aat ggg act gat att cac tca tta att          1612
Ile Val Arg Ile Asn Arg Phe Asn Gly Thr Asp Ile His Ser Leu Ile
        475             480             485

aaa att gag aat gct tgg gga atc cga att tat caa aaa aga act caa          1660
Lys Ile Glu Asn Ala Trp Gly Ile Arg Ile Tyr Gln Lys Arg Thr Gln
    490             495             500

cca aca gtc aga agc cat gca tgt gaa gtc gat cca tat gga atg cca          1708
Pro Thr Val Arg Ser His Ala Cys Glu Val Asp Pro Tyr Gly Met Pro
505             510             515             520

ggg ggc tgt tca cac atc tgt cta ctc agc agc agt tac aaa act cgg          1756
Gly Gly Cys Ser His Ile Cys Leu Leu Ser Ser Ser Tyr Lys Thr Arg
            525             530             535

act tgt cgc tgc agg act ggc ttc aac ttg gga agt gat ggc agg tca          1804
Thr Cys Arg Cys Arg Thr Gly Phe Asn Leu Gly Ser Asp Gly Arg Ser
            540             545             550

tgc aaa aga cca aag aat gag ttg ttc ctc ttt tat ggg aaa gga cgc          1852
Cys Lys Arg Pro Lys Asn Glu Leu Phe Leu Phe Tyr Gly Lys Gly Arg
        555             560             565

cca gga att gtt aga gga atg gac ttg aat acc aag ata gct gat gaa          1900
Pro Gly Ile Val Arg Gly Met Asp Leu Asn Thr Lys Ile Ala Asp Glu
    570             575             580

tac atg atc ccc ata gaa aat ctg gta aac cct cgt gct tta gac ttt          1948
Tyr Met Ile Pro Ile Glu Asn Leu Val Asn Pro Arg Ala Leu Asp Phe
585             590             595             600

cac gca gaa acc aat tac atc tac ttt gct gac acc acc agt ttc cta          1996
His Ala Glu Thr Asn Tyr Ile Tyr Phe Ala Asp Thr Thr Ser Phe Leu
            605             610             615

att ggc cgg cag aag ata gat ggc aca gag aga gaa acc atc ctg aaa          2044
Ile Gly Arg Gln Lys Ile Asp Gly Thr Glu Arg Glu Thr Ile Leu Lys
            620             625             630

gat gat ctg gat aat gta gag g                                            2066
Asp Asp Leu Asp Asn Val Glu
        635
```

```
<210>  15
<211>  639
```

```
<212>   PRT
<213>   Homo sapiens

<400>   15

Met Thr Pro Leu Asp Ser Arg Leu Gln Ala Ala Pro Ala Ala Ala Ala
1               5                   10                  15


Ala Ala Gly Pro Lys Val Pro Pro Ser Ser Leu Gln Arg Arg Leu Pro
                20                  25                  30


Tyr Arg Ala Thr Thr Met Ser Glu Phe Leu Leu Ala Leu Leu Thr Leu
        35                  40                  45


Ser Gly Leu Leu Pro Ile Ala Arg Val Leu Thr Val Gly Ala Asp Arg
    50                  55                  60


Asp Gln Gln Leu Cys Asp Pro Gly Glu Phe Leu Cys His Asp His Val
65                  70                  75                  80


Thr Cys Val Ser Gln Ser Trp Leu Cys Asp Gly Asp Pro Asp Cys Pro
                85                  90                  95


Asp Asp Ser Asp Glu Ser Leu Asp Thr Cys Pro Glu Glu Val Glu Ile
                100                 105                 110


Lys Cys Pro Leu Asn His Ile Ala Cys Leu Gly Thr Asn Lys Cys Val
        115                 120                 125


His Leu Ser Gln Leu Cys Asn Gly Val Leu Asp Cys Pro Asp Gly Tyr
    130                 135                 140


Asp Glu Gly Val His Cys Gln Glu Leu Leu Ser Asn Cys Gln Gln Leu
145                 150                 155                 160


Asn Cys Gln Tyr Lys Cys Thr Met Val Arg Asn Ser Thr Arg Cys Tyr
                165                 170                 175


Cys Glu Asp Gly Phe Glu Ile Thr Glu Asp Gly Arg Ser Cys Lys Asp
                180                 185                 190


Gln Asp Glu Cys Ala Val Tyr Gly Thr Gly Ser Gln Thr Cys Arg Asn
        195                 200                 205


Thr His Gly Ser Tyr Thr Cys Ser Cys Val Glu Gly Tyr Leu Met Gln
    210                 215                 220


Pro Asp Ser Arg Ser Cys Lys Ala Lys Ile Glu Pro Thr Asp Arg Pro
225                 230                 235                 240
```

```
Arg Ile Leu Leu Ile Ala Asn Phe Glu Ser Ile Glu Val Phe Tyr Leu
              245                 250                 255

Asn Gly Ser Lys Ile Ala Thr Leu Ser Ser Val Asn Gly Asn Glu Ile
              260                 265                 270

His Thr Leu Asp Phe Ile Tyr Asn Glu Asp Val Ile Cys Trp Ile Glu
          275                 280                 285

Ser Arg Glu Ser Ser Asn Gln Leu Lys Cys Ile Gln Ile Thr Lys Ala
      290                 295                 300

Gly Gly Leu Thr Asp Glu Trp Thr Ile Asn Ile Leu Gln Ser Phe His
305                 310                 315                 320

Asn Val Gln Gln Met Ala Ile Asp Trp Leu Thr Arg Asn Leu Tyr Phe
              325                 330                 335

Val Asp His Val Gly Asp Arg Ile Phe Val Cys Asn Ser Asn Gly Ser
          340                 345                 350

Val Cys Val Thr Leu Ile Asp Leu Glu Leu His Asn Pro Lys Ala Ile
          355                 360                 365

Ala Val Asp Pro Ile Ala Gly Lys Leu Phe Phe Thr Asp Tyr Gly Asn
370                 375                 380

Val Ala Lys Val Glu Arg Cys Asp Met Asp Gly Met Asn Arg Thr Arg
385                 390                 395                 400

Ile Ile Asp Ser Lys Thr Glu Gln Pro Ala Ala Leu Ala Leu Asp Leu
              405                 410                 415

Val Asn Lys Leu Val Tyr Trp Val Asp Leu Tyr Leu Asp Tyr Val Gly
          420                 425                 430

Val Val Asp Tyr Gln Gly Lys Asn Arg His Thr Val Ile Gln Gly Arg
          435                 440                 445

Gln Val Arg His Leu Tyr Gly Ile Thr Val Phe Glu Asp Tyr Leu Tyr
      450                 455                 460

Ala Thr Asn Ser Asp Asn Tyr Asn Ile Val Arg Ile Asn Arg Phe Asn
465                 470                 475                 480

Gly Thr Asp Ile His Ser Leu Ile Lys Ile Glu Asn Ala Trp Gly Ile
              485                 490                 495
```

```
Arg Ile Tyr Gln Lys Arg Thr Gln Pro Thr Val Arg Ser His Ala Cys
            500                 505                 510

Glu Val Asp Pro Tyr Gly Met Pro Gly Gly Cys Ser His Ile Cys Leu
            515                 520                 525

Leu Ser Ser Ser Tyr Lys Thr Arg Thr Cys Arg Cys Arg Thr Gly Phe
    530                 535                 540

Asn Leu Gly Ser Asp Gly Arg Ser Cys Lys Arg Pro Lys Asn Glu Leu
545                 550                 555                 560

Phe Leu Phe Tyr Gly Lys Gly Arg Pro Gly Ile Val Arg Gly Met Asp
                565                 570                 575

Leu Asn Thr Lys Ile Ala Asp Glu Tyr Met Ile Pro Ile Glu Asn Leu
            580                 585                 590

Val Asn Pro Arg Ala Leu Asp Phe His Ala Glu Thr Asn Tyr Ile Tyr
            595                 600                 605

Phe Ala Asp Thr Thr Ser Phe Leu Ile Gly Arg Gln Lys Ile Asp Gly
    610                 615                 620

Thr Glu Arg Glu Thr Ile Leu Lys Asp Asp Leu Asp Asn Val Glu
625                 630                 635
```

```
<210>  16
<211>  1333
<212>  DNA
<213>  Homo sapiens

<220>
<221>  CDS
<222>  (280)..(1323)

<400>  16
gagatccaca cagctcggac cggctggatc ttgctcagtc tctgtcagag gaagatccct     60

tggaggaggc cccgcagcga catggaggga gctgctttgc tgaaagtctt tgtcctctgc    120

atctggaacc aaaatcactt cccggaattg accaactggt agactcgcct agagggaag     180

cattgtgtcc tagttgaggc taacagtcag tatccagcct caacattcag cagaggcccc    240

agatcagcgt ctgagccagg ccaacaatga ccaaggagg atg gga tcc tgg gtg      294
                                         Met Gly Ser Trp Val
                                          1               5

cag ctc atc aca agc gtc ggg gtg cag caa aac cat cca ggc tgg aca    342
Gln Leu Ile Thr Ser Val Gly Val Gln Gln Asn His Pro Gly Trp Thr
             10                  15                  20
```

```
gtg gct gga cag ttc caa gaa aag aaa cgc ttc act gaa gaa gtc att      390
Val Ala Gly Gln Phe Gln Glu Lys Lys Arg Phe Thr Glu Glu Val Ile
            25                  30                  35

gaa tac ttc cag aag aaa gtt agc cca gtg cat ctg aaa atc ctg ctg      438
Glu Tyr Phe Gln Lys Lys Val Ser Pro Val His Leu Lys Ile Leu Leu
            40                  45                  50

act agc gat gaa gcc tgg aag aga ttc gtg cgt gtg gct gaa ttg ccc      486
Thr Ser Asp Glu Ala Trp Lys Arg Phe Val Arg Val Ala Glu Leu Pro
            55                  60                  65

agg gaa gaa gca gat gct ctc tat gaa gct ctg aag aat ctt aca cca      534
Arg Glu Glu Ala Asp Ala Leu Tyr Glu Ala Leu Lys Asn Leu Thr Pro
        70                  75                  80              85

tat gtg gct att gag gac aaa gac atg cag caa aaa gaa cag cag ttt      582
Tyr Val Ala Ile Glu Asp Lys Asp Met Gln Gln Lys Glu Gln Gln Phe
                    90                  95                  100

agg gag tgg ttt ttg aaa gag ttt cct caa atc aga tgg aag att cag      630
Arg Glu Trp Phe Leu Lys Glu Phe Pro Gln Ile Arg Trp Lys Ile Gln
                105                 110                 115

gag tcc ata gaa agg ctt cgt gtc att gca aat gag att gaa aag gtc      678
Glu Ser Ile Glu Arg Leu Arg Val Ile Ala Asn Glu Ile Glu Lys Val
                120                 125                 130

cac aga ggc tgc gtc atc gcc aat gtg gtg tct ggc tcc act ggc atc      726
His Arg Gly Cys Val Ile Ala Asn Val Val Ser Gly Ser Thr Gly Ile
            135                 140                 145

ctg tct gtc att ggc gtt atg ttg gca cca ttt aca gca ggg ctg agc      774
Leu Ser Val Ile Gly Val Met Leu Ala Pro Phe Thr Ala Gly Leu Ser
        150                 155                 160             165

ctg agc att act gca gct ggg gta ggg ctg gga ata gca tct gcc acg      822
Leu Ser Ile Thr Ala Ala Gly Val Gly Leu Gly Ile Ala Ser Ala Thr
                170                 175                 180

gct ggg atc gcc tcc agc atc gtg gag aac aca tac aca agg tca gca      870
Ala Gly Ile Ala Ser Ser Ile Val Glu Asn Thr Tyr Thr Arg Ser Ala
                185                 190                 195

gaa ctc aca gcc agc agg ctg act gca acc agc act gac caa ttg gag      918
Glu Leu Thr Ala Ser Arg Leu Thr Ala Thr Ser Thr Asp Gln Leu Glu
            200                 205                 210

gca tta agg gac att ctg cgt gac atc aca ccc aat gtg ctt tct ttt      966
Ala Leu Arg Asp Ile Leu Arg Asp Ile Thr Pro Asn Val Leu Ser Phe
            215                 220                 225

gca ctt gat ttt gac gaa gcc aca aaa atg att gcg aat gat gtc cat      1014
Ala Leu Asp Phe Asp Glu Ala Thr Lys Met Ile Ala Asn Asp Val His
230                 235                 240                 245

aca ctc agg aga tct aaa gcc act gtt gga cgc cct ttg att gct tgg      1062
Thr Leu Arg Arg Ser Lys Ala Thr Val Gly Arg Pro Leu Ile Ala Trp
                250                 255                 260

cga tat gta cct ata aat gtt gtt gag aca ctg aga aca cgt ggg gcc      1110
Arg Tyr Val Pro Ile Asn Val Val Glu Thr Leu Arg Thr Arg Gly Ala
                265                 270                 275
```

```
ccc acc cgg ata gtg aga aaa gta gcc cgg aac ctg ggc aag gcc act    1158
Pro Thr Arg Ile Val Arg Lys Val Ala Arg Asn Leu Gly Lys Ala Thr
        280                 285                 290

tca ggt gtc ctt gtt gtg ctg gat gta gtc aac ctt gtg caa gac tca    1206
Ser Gly Val Leu Val Val Leu Asp Val Val Asn Leu Val Gln Asp Ser
        295                 300                 305

ctg gac ttg cac aag ggg gca aaa tcc gag tct gct gag tcg ctg agg    1254
Leu Asp Leu His Lys Gly Ala Lys Ser Glu Ser Ala Glu Ser Leu Arg
310                 315                 320                 325

cag tgg gct cag gag ctg gag gag aat ctc aat gag ctc acc cat atc    1302
Gln Trp Ala Gln Glu Leu Glu Glu Asn Leu Asn Glu Leu Thr His Ile
                330                 335                 340

cat cag agt cta aaa gca ggc taggcccaat                             1333
His Gln Ser Leu Lys Ala Gly
                345
```

<210> 17
<211> 348
<212> PRT
<213> Homo sapiens

<400> 17

```
Met Gly Ser Trp Val Gln Leu Ile Thr Ser Val Gly Val Gln Gln Asn
1               5                   10                  15

His Pro Gly Trp Thr Val Ala Gly Gln Phe Gln Glu Lys Lys Arg Phe
            20                  25                  30

Thr Glu Glu Val Ile Glu Tyr Phe Gln Lys Lys Val Ser Pro Val His
        35                  40                  45

Leu Lys Ile Leu Leu Thr Ser Asp Glu Ala Trp Lys Arg Phe Val Arg
    50                  55                  60

Val Ala Glu Leu Pro Arg Glu Glu Ala Asp Ala Leu Tyr Glu Ala Leu
65                  70                  75                  80

Lys Asn Leu Thr Pro Tyr Val Ala Ile Glu Asp Lys Asp Met Gln Gln
                85                  90                  95

Lys Glu Gln Gln Phe Arg Glu Trp Phe Leu Lys Glu Phe Pro Gln Ile
            100                 105                 110

Arg Trp Lys Ile Gln Glu Ser Ile Glu Arg Leu Arg Val Ile Ala Asn
            115                 120                 125

Glu Ile Glu Lys Val His Arg Gly Cys Val Ile Ala Asn Val Val Ser
130                 135                 140
```

```
Gly Ser Thr Gly Ile Leu Ser Val Ile Gly Val Met Leu Ala Pro Phe
145                 150                 155                 160

Thr Ala Gly Leu Ser Leu Ser Ile Thr Ala Ala Gly Val Gly Leu Gly
                165                 170                 175

Ile Ala Ser Ala Thr Ala Gly Ile Ala Ser Ser Ile Val Glu Asn Thr
                180                 185                 190

Tyr Thr Arg Ser Ala Glu Leu Thr Ala Ser Arg Leu Thr Ala Thr Ser
            195                 200                 205

Thr Asp Gln Leu Glu Ala Leu Arg Asp Ile Leu Arg Asp Ile Thr Pro
        210                 215                 220

Asn Val Leu Ser Phe Ala Leu Asp Phe Asp Glu Ala Thr Lys Met Ile
225                 230                 235                 240

Ala Asn Asp Val His Thr Leu Arg Arg Ser Lys Ala Thr Val Gly Arg
                245                 250                 255

Pro Leu Ile Ala Trp Arg Tyr Val Pro Ile Asn Val Val Glu Thr Leu
                260                 265                 270

Arg Thr Arg Gly Ala Pro Thr Arg Ile Val Arg Lys Val Ala Arg Asn
            275                 280                 285

Leu Gly Lys Ala Thr Ser Gly Val Leu Val Val Leu Asp Val Val Asn
        290                 295                 300

Leu Val Gln Asp Ser Leu Asp Leu His Lys Gly Ala Lys Ser Glu Ser
305                 310                 315                 320

Ala Glu Ser Leu Arg Gln Trp Ala Gln Glu Leu Glu Glu Asn Leu Asn
                325                 330                 335

Glu Leu Thr His Ile His Gln Ser Leu Lys Ala Gly
            340                 345
```

```
<210>  18
<211>  1490
<212>  DNA
<213>  Homo sapiens

<220>
<221>  CDS
<222>  (151)..(1170)

<400>  18
agcaaaagag aaaaggagcc aggctgggct tcctgatccc acagcatcgc agagctcggg      60
```

```
aggcacagct cacagacaca ggaaacacag gactgctatt ctgctctcct gcccacggtg          120

atctggtgcc agctggtgga acagtgggtg atg gcg tcc ctg ctg caa gac cag          174
                                  Met Ala Ser Leu Leu Gln Asp Gln
                                  1               5

ctg acc act gat cag gac ttg ctg ctg atg cag gaa ggc atg ccg atg          222
Leu Thr Thr Asp Gln Asp Leu Leu Leu Met Gln Glu Gly Met Pro Met
        10              15                  20

cgc aag gtg agg tcc aaa agc tgg aag aag cta aga tac ttc aga ctt          270
Arg Lys Val Arg Ser Lys Ser Trp Lys Lys Leu Arg Tyr Phe Arg Leu
25              30                  35                  40

cag aat gac ggc atg aca gtc tgg cat gca cgg cag gcc agg ggc agt          318
Gln Asn Asp Gly Met Thr Val Trp His Ala Arg Gln Ala Arg Gly Ser
                    45                  50                  55

gcc aag ccc agc ttc tca atc tct gat gtg gag aca ata cgt aat ggc          366
Ala Lys Pro Ser Phe Ser Ile Ser Asp Val Glu Thr Ile Arg Asn Gly
                60                  65                  70

cat gat tcc gag ttg ctg cgt agc ctg gca gag gag ctc ccc ctg gag          414
His Asp Ser Glu Leu Leu Arg Ser Leu Ala Glu Glu Leu Pro Leu Glu
            75                  80                  85

cag ggc ttc acc att gtc ttc cat ggc cgc cgc tcc aac ctg gac ctg          462
Gln Gly Phe Thr Ile Val Phe His Gly Arg Arg Ser Asn Leu Asp Leu
        90                  95                  100

atg gcc aac agt gtt gag gag gcc cag ata tgg atg cga ggg ctc cag          510
Met Ala Asn Ser Val Glu Glu Ala Gln Ile Trp Met Arg Gly Leu Gln
105                 110                 115                 120

ctg ttg gtg gat ctt gtc acc agc atg gac cat cag gag cgc ctg gac          558
Leu Leu Val Asp Leu Val Thr Ser Met Asp His Gln Glu Arg Leu Asp
                125                 130                 135

caa tgg ctg agc gat tgg ttt caa cgt gga gac aaa aat cag gat ggt          606
Gln Trp Leu Ser Asp Trp Phe Gln Arg Gly Asp Lys Asn Gln Asp Gly
            140                 145                 150

aag atg agt ttc caa gaa gtt cag cgg tta ttg cac cta atg aat gtg          654
Lys Met Ser Phe Gln Glu Val Gln Arg Leu Leu His Leu Met Asn Val
        155                 160                 165

gaa atg gac caa gaa tat gcc ttc agt ctt ttt cag gca gca gac acg          702
Glu Met Asp Gln Glu Tyr Ala Phe Ser Leu Phe Gln Ala Ala Asp Thr
170                 175                 180

tcc cag tct gga acc ctg gaa gga gaa gaa ttc gta cag ttc tat aag          750
Ser Gln Ser Gly Thr Leu Glu Gly Glu Glu Phe Val Gln Phe Tyr Lys
185                 190                 195                 200

gca ttg act aaa cgt gct gag gtg cag gaa ctg ttt gaa agt ttt tca          798
Ala Leu Thr Lys Arg Ala Glu Val Gln Glu Leu Phe Glu Ser Phe Ser
                205                 210                 215

gct gat ggg cag aag ctg act ctg ctg gaa ttt ttg gat ttc ctc caa          846
Ala Asp Gly Gln Lys Leu Thr Leu Leu Glu Phe Leu Asp Phe Leu Gln
                220                 225                 230

gag gag cag aag gag aga gac tgc acc tct gag ctt gct ctg gaa ctc          894
```

```
Glu Glu Gln Lys Glu Arg Asp Cys Thr Ser Glu Leu Ala Leu Glu Leu
        235                 240                 245

att gac cgc tat gaa cct tca gac agt ggc aaa ctg cgg cat gtg ctg      942
Ile Asp Arg Tyr Glu Pro Ser Asp Ser Gly Lys Leu Arg His Val Leu
        250                 255                 260

agt atg gat ggc ttc ctc agc tac ctc tgc tct aag gat gga gac atc      990
Ser Met Asp Gly Phe Leu Ser Tyr Leu Cys Ser Lys Asp Gly Asp Ile
265                 270                 275                 280

ttc aac cca gcc tgc ctc ccc atc tat cag gat atg act caa ccc ctg     1038
Phe Asn Pro Ala Cys Leu Pro Ile Tyr Gln Asp Met Thr Gln Pro Leu
                285                 290                 295

aac cac tac ttc atc tgc tct tct cat aac acc tac cta gtg ggg gac     1086
Asn His Tyr Phe Ile Cys Ser Ser His Asn Thr Tyr Leu Val Gly Asp
                300                 305                 310

cag ctt tgc ggc cag agc agc gtc gag gga tat ata cgg tgc agt ggt     1134
Gln Leu Cys Gly Gln Ser Ser Val Glu Gly Tyr Ile Arg Cys Ser Gly
            315                 320                 325

ggt aga gaa ggg gtc caa ctc atg aga ggg acc atg tagaaaagtg          1180
Gly Arg Glu Gly Val Gln Leu Met Arg Gly Thr Met
        330                 335                 340

aggggagctg tcagtgtcta acagattggg acagtgttgt gggggtttag gggctgagga   1240

gccctggata ccagagacac ttggaggaga tattgaagac tggtgggaga atggtaatga   1300

aaccctatgg gtcaatggaa cttctctttc acaagctatg aaactctcct ggaactcaga   1360

ggccctgaca gatttatatt taacaaatta ataaacagat tgttaaatgg aaggcaatag   1420

agaataggag ttaaaaatat aggttctgga gtcagaccat ctgaaattat atcctagctc   1480

ctttacttgg                    .                                     1490
```

<210> 19
<211> 340
<212> PRT
<213> Homo sapiens

<400> 19

```
Met Ala Ser Leu Leu Gln Asp Gln Leu Thr Thr Asp Gln Asp Leu Leu
1               5                   10                  15

Leu Met Gln Glu Gly Met Pro Met Arg Lys Val Arg Ser Lys Ser Trp
            20                  25                  30

Lys Lys Leu Arg Tyr Phe Arg Leu Gln Asn Asp Gly Met Thr Val Trp
        35                  40                  45

His Ala Arg Gln Ala Arg Gly Ser Ala Lys Pro Ser Phe Ser Ile Ser
    50                  55                  60
```

Asp Val Glu Thr Ile Arg Asn Gly His Asp Ser Glu Leu Leu Arg Ser
65   70   75   80

Leu Ala Glu Glu Leu Pro Leu Glu Gln Gly Phe Thr Ile Val Phe His
                    85   90   95

Gly Arg Arg Ser Asn Leu Asp Leu Met Ala Asn Ser Val Glu Glu Ala
                    100   105   110

Gln Ile Trp Met Arg Gly Leu Gln Leu Leu Val Asp Leu Val Thr Ser
          115   120   125

Met Asp His Gln Glu Arg Leu Asp Gln Trp Leu Ser Asp Trp Phe Gln
          130   135   140

Arg Gly Asp Lys Asn Gln Asp Gly Lys Met Ser Phe Gln Glu Val Gln
145   150   155   160

Arg Leu Leu His Leu Met Asn Val Glu Met Asp Gln Glu Tyr Ala Phe
                    165   170   175

Ser Leu Phe Gln Ala Ala Asp Thr Ser Gln Ser Gly Thr Leu Glu Gly
                    180   185   190

Glu Glu Phe Val Gln Phe Tyr Lys Ala Leu Thr Lys Arg Ala Glu Val
          195   200   205

Gln Glu Leu Phe Glu Ser Phe Ser Ala Asp Gly Gln Lys Leu Thr Leu
          210   215   220

Leu Glu Phe Leu Asp Phe Leu Gln Glu Glu Gln Lys Glu Arg Asp Cys
225   230   235   240

Thr Ser Glu Leu Ala Leu Glu Leu Ile Asp Arg Tyr Glu Pro Ser Asp
                    245   250   255

Ser Gly Lys Leu Arg His Val Leu Ser Met Asp Gly Phe Leu Ser Tyr
                    260   265   270

Leu Cys Ser Lys Asp Gly Asp Ile Phe Asn Pro Ala Cys Leu Pro Ile
          275   280   285

Tyr Gln Asp Met Thr Gln Pro Leu Asn His Tyr Phe Ile Cys Ser Ser
          290   295   300

His Asn Thr Tyr Leu Val Gly Asp Gln Leu Cys Gly Gln Ser Ser Val
305   310   315   320

```
Glu Gly Tyr Ile Arg Cys Ser Gly Gly Arg Glu Gly Val Gln Leu Met
            325                 330                 335


Arg Gly Thr Met
            340


<210>  20
<211>  2035
<212>  DNA
<213>  Homo sapiens

<220>
<221>  CDS
<222>  (189)..(1415)

<400>  20
ccaactaagc ttgcctaatt tgcttcagaa ttggaagagg gaattgcagc aggaaaatat      60

gtgaagagtt tttaaaccca caaattcttc ttactttaga attagttgtt acattggcag     120

gaaaaaataa atgcagatgt tggaccatgt tggaaacctt gtcaagacag tggattgtct     180

cacacagaga atg gaa atg tgg ctt ctg att ctg gtg gcg tat atg ttc cag     230
            Met Glu Met Trp Leu Leu Ile Leu Val Ala Tyr Met Phe Gln
             1               5                  10

aga aat gtg aat tca gta cat atg cca act aaa gct gtg gac cca gaa     278
Arg Asn Val Asn Ser Val His Met Pro Thr Lys Ala Val Asp Pro Glu
 15                  20                  25                  30

gca ttc atg aat att agt gaa atc atc caa cat caa ggc tat ccc tgt     326
Ala Phe Met Asn Ile Ser Glu Ile Ile Gln His Gln Gly Tyr Pro Cys
                35                  40                  45

gag gaa tat gaa gtc gca act gaa gat ggg tat atc ctt tct gtt aac     374
Glu Glu Tyr Glu Val Ala Thr Glu Asp Gly Tyr Ile Leu Ser Val Asn
             50                  55                  60

agg att cct cga ggc cta gtg caa cct aag aag aca ggt tcc agg cct     422
Arg Ile Pro Arg Gly Leu Val Gln Pro Lys Lys Thr Gly Ser Arg Pro
         65                  70                  75

gtg gtg tta ctg cag cat ggc cta gtt gga ggt gct agc aac tgg att     470
Val Val Leu Leu Gln His Gly Leu Val Gly Gly Ala Ser Asn Trp Ile
 80                  85                  90

tcc aac ctg ccc aac aat agc ctg ggc ttc att ctg gca gat gct ggt     518
Ser Asn Leu Pro Asn Asn Ser Leu Gly Phe Ile Leu Ala Asp Ala Gly
 95                 100                 105                 110

ttt gac gtg tgg atg ggg aac agc agg gga aac gcc tgg tct cga aaa     566
Phe Asp Val Trp Met Gly Asn Ser Arg Gly Asn Ala Trp Ser Arg Lys
                115                 120                 125

cac aag aca ctc tca ata gac caa gat gag ttc tgg gct ttc agt tat     614
His Lys Thr Leu Ser Ile Asp Gln Asp Glu Phe Trp Ala Phe Ser Tyr
            130                 135                 140

gat gag atg gct agg ttt gac ctt cct gca gtg ata aac ttt att ttg     662
Asp Glu Met Ala Arg Phe Asp Leu Pro Ala Val Ile Asn Phe Ile Leu
            145                 150                 155
```

```
cag aaa acg ggc cag gaa aag atc tat tat gtc ggc tat tca cag ggc      710
Gln Lys Thr Gly Gln Glu Lys Ile Tyr Tyr Val Gly Tyr Ser Gln Gly
    160                 165                 170

acc acc atg ggc ttt att gca ttt tcc acc atg cca gag ctg gct cag      758
Thr Thr Met Gly Phe Ile Ala Phe Ser Thr Met Pro Glu Leu Ala Gln
175                 180                 185                 190

aaa atc aaa atg tat ttt gct tta gca ccc ata gcc act gtt aag cat      806
Lys Ile Lys Met Tyr Phe Ala Leu Ala Pro Ile Ala Thr Val Lys His
                195                 200                 205

gca aaa agc ccc ggg acc aaa ttt ttg ttg ctg cca gat atg atg atc      854
Ala Lys Ser Pro Gly Thr Lys Phe Leu Leu Leu Pro Asp Met Met Ile
                210                 215                 220

aag gga ttg ttt ggc aaa aaa gaa ttt ctg tat cag acc aga ttt ctc      902
Lys Gly Leu Phe Gly Lys Lys Glu Phe Leu Tyr Gln Thr Arg Phe Leu
            225                 230                 235

aga caa ctt gtt att tac ctt tgt ggc cag gtg att ctt gat cag att      950
Arg Gln Leu Val Ile Tyr Leu Cys Gly Gln Val Ile Leu Asp Gln Ile
    240                 245                 250

tgt agt aat atc atg tta ctt ctg ggt gga ttc aac acc aac aat atg      998
Cys Ser Asn Ile Met Leu Leu Leu Gly Gly Phe Asn Thr Asn Asn Met
255                 260                 265                 270

aac atg agc cga gca agt gta tat gct gcc cac act ctt gct gga aca     1046
Asn Met Ser Arg Ala Ser Val Tyr Ala Ala His Thr Leu Ala Gly Thr
                275                 280                 285

tct gtg caa aat att cta cac tgg agc cag gca gtg aat tct ggt gaa     1094
Ser Val Gln Asn Ile Leu His Trp Ser Gln Ala Val Asn Ser Gly Glu
                290                 295                 300

ctc cgg gca ttt gac tgg ggg agt gag acc aaa aat ctg gaa aaa tgc     1142
Leu Arg Ala Phe Asp Trp Gly Ser Glu Thr Lys Asn Leu Glu Lys Cys
            305                 310                 315

aat cag cca act cct gta agg tac aga gtc aga gat atg acg gtc cct     1190
Asn Gln Pro Thr Pro Val Arg Tyr Arg Val Arg Asp Met Thr Val Pro
    320                 325                 330

aca gca atg tgg aca gga ggt cag gac tgg ctt tca aat cca gaa gac     1238
Thr Ala Met Trp Thr Gly Gly Gln Asp Trp Leu Ser Asn Pro Glu Asp
335                 340                 345                 350

gtg aaa atg ctg ctc tct gag gtg acc aac ctc atc tac cat aag aat     1286
Val Lys Met Leu Leu Ser Glu Val Thr Asn Leu Ile Tyr His Lys Asn
                355                 360                 365

att cct gaa tgg gct cat gtg gat ttc atc tgg ggt ttg gat gct cct     1334
Ile Pro Glu Trp Ala His Val Asp Phe Ile Trp Gly Leu Asp Ala Pro
                370                 375                 380

cac cgt atg tac aat gaa atc atc cat ctg atg cag cag gag gag acc     1382
His Arg Met Tyr Asn Glu Ile Ile His Leu Met Gln Gln Glu Glu Thr
                385                 390                 395

aac ctt tcc cag gga cgg tgt gag gcc gta ttg tgaagcatct gacactgacg    1435
Asn Leu Ser Gln Gly Arg Cys Glu Ala Val Leu
    400                 405
```

```
atcttaggac aacctcctga gggatggggc taggacccat gaaggcagaa ttatggagag   1495

cagagaccta gtatacattt ttcagattcc ctgcacttgg cactaaatcc gacacttaca   1555

tttacatttt ttttctgtaa attaaagtac ttattaggta aatagaggtt ttgtatgcta   1615

ttatatattc taccatcttg aagggtaggt tttacctgat agccagaaaa tatctagaca   1675

ttctctatat cattcaggta aatctcttta aaacacctat tgtttttct ataagccata    1735

tttttggagc actaaagtaa aatggcaaat tgggacagat attgaggtct ggagtctgtg   1795

gattattgtt gactttgaca aaataagcta gacattttca ccttgttgcc acagagacat   1855

aacactacct caggaagctg agctgcttta aggacaacaa caacaaaatc agtgttacag   1915

tatggatgaa atctatgtta agcattctca gaataaggcc aagtttata gttgcatctc    1975

agggaagaaa attttatagg atgtttatga gttctccaat aaatgcattc tgcattacat   2035
```

```
Met Glu Met Trp Leu Leu Ile Leu Val Ala Tyr Met Phe Gln Arg Asn
1               5                   10                  15


Val Asn Ser Val His Met Pro Thr Lys Ala Val Asp Pro Glu Ala Phe
            20                  25                  30


Met Asn Ile Ser Glu Ile Ile Gln His Gln Gly Tyr Pro Cys Glu Glu
        35                  40                  45


Tyr Glu Val Ala Thr Glu Asp Gly Tyr Ile Leu Ser Val Asn Arg Ile
    50                  55                  60


Pro Arg Gly Leu Val Gln Pro Lys Lys Thr Gly Ser Arg Pro Val Val
65                  70                  75                  80


Leu Leu Gln His Gly Leu Val Gly Gly Ala Ser Asn Trp Ile Ser Asn
                85                  90                  95


Leu Pro Asn Asn Ser Leu Gly Phe Ile Leu Ala Asp Ala Gly Phe Asp
            100                 105                 110


Val Trp Met Gly Asn Ser Arg Gly Asn Ala Trp Ser Arg Lys His Lys
        115                 120                 125


Thr Leu Ser Ile Asp Gln Asp Glu Phe Trp Ala Phe Ser Tyr Asp Glu
    130                 135                 140
```

```
Met Ala Arg Phe Asp Leu Pro Ala Val Ile Asn Phe Ile Leu Gln Lys
145                 150                 155                 160

Thr Gly Gln Glu Lys Ile Tyr Tyr Val Gly Tyr Ser Gln Gly Thr Thr
                165                 170                 175

Met Gly Phe Ile Ala Phe Ser Thr Met Pro Glu Leu Ala Gln Lys Ile
            180                 185                 190

Lys Met Tyr Phe Ala Leu Ala Pro Ile Ala Thr Val Lys His Ala Lys
    195                 200                 205

Ser Pro Gly Thr Lys Phe Leu Leu Leu Pro Asp Met Met Ile Lys Gly
    210                 215                 220

Leu Phe Gly Lys Lys Glu Phe Leu Tyr Gln Thr Arg Phe Leu Arg Gln
225                 230                 235                 240

Leu Val Ile Tyr Leu Cys Gly Gln Val Ile Leu Asp Gln Ile Cys Ser
                245                 250                 255

Asn Ile Met Leu Leu Leu Gly Gly Phe Asn Thr Asn Asn Met Asn Met
            260                 265                 270

Ser Arg Ala Ser Val Tyr Ala Ala His Thr Leu Ala Gly Thr Ser Val
    275                 280                 285

Gln Asn Ile Leu His Trp Ser Gln Ala Val Asn Ser Gly Glu Leu Arg
    290                 295                 300

Ala Phe Asp Trp Gly Ser Glu Thr Lys Asn Leu Glu Lys Cys Asn Gln
305                 310                 315                 320

Pro Thr Pro Val Arg Tyr Arg Val Arg Asp Met Thr Val Pro Thr Ala
                325                 330                 335

Met Trp Thr Gly Gly Gln Asp Trp Leu Ser Asn Pro Glu Asp Val Lys
            340                 345                 350

Met Leu Leu Ser Glu Val Thr Asn Leu Ile Tyr His Lys Asn Ile Pro
    355                 360                 365

Glu Trp Ala His Val Asp Phe Ile Trp Gly Leu Asp Ala Pro His Arg
    370                 375                 380

Met Tyr Asn Glu Ile Ile His Leu Met Gln Gln Glu Glu Thr Asn Leu
385                 390                 395                 400
```

Ser Gln Gly Arg Cys Glu Ala Val Leu
              405

<210> 22
<211> 2224
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> n = a or c or g or t

<220>
<221> CDS
<222> (82)..(921)
<223> Xaa = Unknown or other

<400> 22
tgcttcctga actagctcac agtagcccgg cggcccaggg caatccgacc acatttcact   60

ctcaccgctg taggaatcca g atg cag gcc aag tac agc agc acg agg gac   111
                           Met Gln Ala Lys Tyr Ser Ser Thr Arg Asp
                           1   5   10

atg ctg gat gat gat ggg gac acc acc atg agc ctg cat tct caa gcc   159
Met Leu Asp Asp Asp Gly Asp Thr Thr Met Ser Leu His Ser Gln Ala
              15   20   25

tct gcc aca act cgg cat cca gag ccc cgg cgc aca gag cac agg gct   207
Ser Ala Thr Thr Arg His Pro Glu Pro Arg Arg Thr Glu His Arg Ala
            30   35   40

ccc tct tca acg tgg cga cca gtg gcc ctg acc ctg ctg act ttg tgc   255
Pro Ser Ser Thr Trp Arg Pro Val Ala Leu Thr Leu Leu Thr Leu Cys
            45   50   55

ttg gtg ctg ctg ata ggg ctg gca gcc ctg ggg ctt ttg ttt ttt cag   303
Leu Val Leu Leu Ile Gly Leu Ala Ala Leu Gly Leu Leu Phe Phe Gln
      60   65   70

tac tac cag ctc tcc aat act ggt caa gac acc att tct caa atg gaa   351
Tyr Tyr Gln Leu Ser Asn Thr Gly Gln Asp Thr Ile Ser Gln Met Glu
75   80   85   90

gaa aga tta gga aat acg tcc caa gag ttg caa tct ctt caa gtc cag   399
Glu Arg Leu Gly Asn Thr Ser Gln Glu Leu Gln Ser Leu Gln Val Gln
               95   100   105

aat ata aag ctt gca gga agt ctg cag cat gtg gct gaa aaa ctc tgt   447
Asn Ile Lys Leu Ala Gly Ser Leu Gln His Val Ala Glu Lys Leu Cys
             110   115   120

cgt gag ctg tat aac aaa gct gga gca cac agg tgc agc cct tgt aca   495
Arg Glu Leu Tyr Asn Lys Ala Gly Ala His Arg Cys Ser Pro Cys Thr
             125   130   135

gaa caa tgg aaa tgg cat gga gac aat tgc tac cag ttc tat aaa gac   543
Glu Gln Trp Lys Trp His Gly Asp Asn Cys Tyr Gln Phe Tyr Lys Asp
             140   145   150

```
agc aaa agt tgg gag gac tgt aaa tat ttc tgc ctt agt gaa aac tct      591
Ser Lys Ser Trp Glu Asp Cys Lys Tyr Phe Cys Leu Ser Glu Asn Ser
155                 160                 165                 170

acc atg ctg aag ata aac aaa caa gaa gac ctg gaa ttt gcc gcg tct      639
Thr Met Leu Lys Ile Asn Lys Gln Glu Asp Leu Glu Phe Ala Ala Ser
                    175                 180                 185

cag agc tac tct gag ttt ttc tac tct tat tgg aca ggg ctt ttg cgc      687
Gln Ser Tyr Ser Glu Phe Phe Tyr Ser Tyr Trp Thr Gly Leu Leu Arg
                190                 195                 200

cct gac agt ggc aag gcc tgg ctg tgg atg gat gga acc cct ttc act      735
Pro Asp Ser Gly Lys Ala Trp Leu Trp Met Asp Gly Thr Pro Phe Thr
                205                 210                 215

tct gaa ctg ttc cat att ata ata gat gtc acc agc cca aga agc aga      783
Ser Glu Leu Phe His Ile Ile Ile Asp Val Thr Ser Pro Arg Ser Arg
        220                 225                 230

gac tgt gtg gcc atc ctt aat ggg atg atc ttc tca aag gac tgc aaa      831
Asp Cys Val Ala Ile Leu Asn Gly Met Ile Phe Ser Lys Asp Cys Lys
235                 240                 245                 250

gaa ttg aag cgt tgt gtc tgt gag aga agg gca gga atg gtg aag cca      879
Glu Leu Lys Arg Cys Val Cys Glu Arg Arg Ala Gly Met Val Lys Pro
                    255                 260                 265

gag agc ctc cat gtc ccc cct gaa aca tta ggc gaa ggt gac            921
Glu Ser Leu His Val Pro Pro Glu Thr Leu Gly Glu Gly Asp
                270                 275                 280

tgattcgccc tctgcaacta caaatagcag agtgagccag gcggtgccaa agcaagggct    981

agttgagaca ttgggaaatg gaacataatc aggaaagact atctctctga ctagtacaaa    1041

atgggttctc gtgtttcctg ttcaggatca ccagcatttc tgagcttggg tttatgcacg    1101

tatttaacag tcacaagaag tcttatttac atgccaccaa ccaacctcag aaacccataa    1161

tgtcatctgc cttcttggct tagagataac ttttagctct ctttcttctc aatgtctaat    1221

atcacctccc tgttttcatg tcttccttac acttggtgga ataagaaact ttttgaagta    1281

gaggaaatac attgaggtaa catccttttc tctgacagtc aagtagtcca tcagaaattg    1341

gcagtcactt cccagattgt accagcaaat acacaaggaa ttcttttgt ttgtttcagt     1401

tcatactagt cccttcccaa tccatcagta aagaccccat ctgccttgtc catgccgttt    1461

cccaacaggg atgtcacttg atatgagaat ctcaaatctc aatgccttat aagcattcct    1521

tcctgtgtcc attaagactc tgataattgt ctcccctcca taggaatttc tcccaggaaa    1581

gaaatatatc cccatctccg tttcatatca gaactaccgt ccccgatatt cccttcagag    1641

agattaaaga ccagaaaaaa gtgagcctct tcatctgcac ctgtaatagt ttcagttcct    1701

attttcttcc attgacccat atttatacct ttcaggtact gaagatttaa taataataaa    1761

tgtaaatact gtgaagtgtg tgtgattta caatggactt atggttggtg ggaaaattca     1821

gcatggaaat gcttttcaaa atatgatagc ggtcattatt ttgattgtgc cttactgaaa    1881
```

```
gtttttgggg aatttacaag agtactgatt acatgattat ctggagaaaa taagatgtct    1941

ttgaaataca tgttggcttc aagaaaacga ttttaacgtt ttcctaaaat gaaatctttt    2001

gaggtgagct tatggcatca acacatggtt gatgaggaag ctgagttgca ttagtgcaca    2061

tgatttccag tcaggtcatg ggaaatgaac agagacagtg acatctttgt agctgctcct    2121

ttgtgaggca cttctttctt gagatgactc catgcacaaa tataacaggg atcattggga    2181

atgacaccat cacagccacc aagnttattg ggttactgat aat                      2224
```

<210> 23
<211> 280
<212> PRT
<213> Homo sapiens

<220>
<221> misc_feature
<223> n = a or c or g or t

<400> 23

```
Met Gln Ala Lys Tyr Ser Ser Thr Arg Asp Met Leu Asp Asp Asp Gly
1               5                   10                  15

Asp Thr Thr Met Ser Leu His Ser Gln Ala Ser Ala Thr Thr Arg His
                20                  25                  30

Pro Glu Pro Arg Arg Thr Glu His Arg Ala Pro Ser Ser Thr Trp Arg
            35                  40                  45

Pro Val Ala Leu Thr Leu Leu Thr Leu Cys Leu Val Leu Leu Ile Gly
        50                  55                  60

Leu Ala Ala Leu Gly Leu Leu Phe Phe Gln Tyr Tyr Gln Leu Ser Asn
65                  70                  75                  80

Thr Gly Gln Asp Thr Ile Ser Gln Met Glu Glu Arg Leu Gly Asn Thr
                85                  90                  95

Ser Gln Glu Leu Gln Ser Leu Gln Val Gln Asn Ile Lys Leu Ala Gly
            100                 105                 110

Ser Leu Gln His Val Ala Glu Lys Leu Cys Arg Glu Leu Tyr Asn Lys
        115                 120                 125

Ala Gly Ala His Arg Cys Ser Pro Cys Thr Glu Gln Trp Lys Trp His
        130                 135                 140

Gly Asp Asn Cys Tyr Gln Phe Tyr Lys Asp Ser Lys Ser Trp Glu Asp
145                 150                 155                 160
```

```
      Cys Lys Tyr Phe Cys Leu Ser Glu Asn Ser Thr Met Leu Lys Ile Asn
                    165                 170                 175


      Lys Gln Glu Asp Leu Glu Phe Ala Ala Ser Gln Ser Tyr Ser Glu Phe
                    180                 185                 190


      Phe Tyr Ser Tyr Trp Thr Gly Leu Leu Arg Pro Asp Ser Gly Lys Ala
                    195                 200                 205


      Trp Leu Trp Met Asp Gly Thr Pro Phe Thr Ser Glu Leu Phe His Ile
          210                 215                 220


      Ile Ile Asp Val Thr Ser Pro Arg Ser Arg Asp Cys Val Ala Ile Leu
      225                 230                 235                 240


      Asn Gly Met Ile Phe Ser Lys Asp Cys Lys Glu Leu Lys Arg Cys Val
                    245                 250                 255


      Cys Glu Arg Arg Ala Gly Met Val Lys Pro Glu Ser Leu His Val Pro
                    260                 265                 270


      Pro Glu Thr Leu Gly Glu Gly Asp
                    275                 280


      <210>  24
      <211>  996
      <212>  DNA
      <213>  Homo sapiens

      <220>
      <221>  CDS
      <222>  (38)..(979)

      <400>  24
      ccgaccacat ttcactctca ccgctgtggg aatccag atg cag gcc aag tac agc      55
                                               Met Gln Ala Lys Tyr Ser
                                                1               5


      agc acg atg gac atg ctg gat gat gat ggg gac acc acc atg agc ctg     103
      Ser Thr Met Asp Met Leu Asp Asp Asp Gly Asp Thr Thr Met Ser Leu
                    10                  15                  20


      cat tct caa gcc tct gcc aca act cgg cat cca gag ccc cgg cgc aca     151
      His Ser Gln Ala Ser Ala Thr Thr Arg His Pro Glu Pro Arg Arg Thr
                    30                                      35


      gag cac agg gct ccc tct tca acg tgg cga cca gtg gcc ctg acc ctg     199
      Glu His Arg Ala Pro Ser Ser Thr Trp Arg Pro Val Ala Leu Thr Leu
          40                  45                  50


      ctg act ttg tgc ttg gtg ctg ctg ata ggg ctg gca gcc ctg ggg ctt     247
      Leu Thr Leu Cys Leu Val Leu Leu Ile Gly Leu Ala Ala Leu Gly Leu
      55                  60                  65                  70


      ttg ttt ttt cag tac tac cag ctc tcc aat act ggt caa gac acc att     295
```

```
                 Leu Phe Phe Gln Tyr Tyr Gln Leu Ser Asn Thr Gly Gln Asp Thr Ile
                              75                      80                      85

tct caa atg gaa gaa aga tta gga aat acg tcc caa gag ttg caa tct        343
Ser Gln Met Glu Glu Arg Leu Gly Asn Thr Ser Gln Glu Leu Gln Ser
             90                      95                     100

ctt caa gtc cag aat ata aag ctt gca gga agt ctg cag cat gtg gct        391
Leu Gln Val Gln Asn Ile Lys Leu Ala Gly Ser Leu Gln His Val Ala
                105                     110                     115

gaa aaa ctc tgt cgt gag ctg tat aac aaa gct gga ggc tat aca aga        439
Glu Lys Leu Cys Arg Glu Leu Tyr Asn Lys Ala Gly Gly Tyr Thr Arg
        120                     125                     130

aac atg gtg cca gca tct gct tct tct gag agc ctc agg cag ctt cca        487
Asn Met Val Pro Ala Ser Ala Ser Ser Glu Ser Leu Arg Gln Leu Pro
        135                     140                     145                 150

cac atg ggg gaa agt gca gca gca cac agg tgc agc cct tgt aca gaa        535
His Met Gly Glu Ser Ala Ala Ala His Arg Cys Ser Pro Cys Thr Glu
                    155                     160                     165

caa tgg aaa tgg cat gga gac aat tgc tac cag ttc tat aaa gac agc        583
Gln Trp Lys Trp His Gly Asp Asn Cys Tyr Gln Phe Tyr Lys Asp Ser
                170                     175                     180

aaa agt tgg gag gac tgt aaa tat ttc tgc ctt agt gaa aac tct acc        631
Lys Ser Trp Glu Asp Cys Lys Tyr Phe Cys Leu Ser Glu Asn Ser Thr
                    185                     190                     195

atg ctg aag ata aac aaa caa gaa gac ctg gaa ttt gcc gcg tct cag        679
Met Leu Lys Ile Asn Lys Gln Glu Asp Leu Glu Phe Ala Ala Ser Gln
        200                     205                     210

agc tac tct gag ttt ttc tac tct tat tgg aca ggg ctt ttg cgc cct        727
Ser Tyr Ser Glu Phe Phe Tyr Ser Tyr Trp Thr Gly Leu Leu Arg Pro
        215                     220                     225                 230

gac agt ggc aag gcc tgg ctg tgg atg gat gga acc cct ttc act tct        775
Asp Ser Gly Lys Ala Trp Leu Trp Met Asp Gly Thr Pro Phe Thr Ser
                    235                     240                     245

gaa ctg ttc cat att ata ata gat gtc acc agc cca aga agc aga gac        823
Glu Leu Phe His Ile Ile Ile Asp Val Thr Ser Pro Arg Ser Arg Asp
                    250                     255                     260

tgt gtg gcc atc ctt aat ggg atg atc ttc tca aag gac tgc aaa gaa        871
Cys Val Ala Ile Leu Asn Gly Met Ile Phe Ser Lys Asp Cys Lys Glu
                265                     270                     275

ttg aag cgt tgt gtc tgt gag aga agg gca gga atg gtg aag cca gag        919
Leu Lys Arg Cys Val Cys Glu Arg Arg Ala Gly Met Val Lys Pro Glu
        280                     285                     290

agc ctc cat gtc ccc cct gaa aca tta ggc gaa ggt gac atg cat cat        967
Ser Leu His Val Pro Pro Glu Thr Leu Gly Glu Gly Asp Met His His
295                     300                     305                     310

cat cat cat cat tagcctaggt tctagac                                     996
His His His His
```

```
<210>  25
<211>  314
<212>  PRT
<213>  Homo sapiens

<400>  25

Met Gln Ala Lys Tyr Ser Ser Thr Met Asp Met Leu Asp Asp Gly
1               5                   10                  15


Asp Thr Thr Met Ser Leu His Ser Gln Ala Ser Ala Thr Thr Arg His
                20                  25                  30


Pro Glu Pro Arg Arg Thr Glu His Arg Ala Pro Ser Ser Thr Trp Arg
            35                  40                  45


Pro Val Ala Leu Thr Leu Leu Thr Leu Cys Leu Val Leu Leu Ile Gly
        50                  55                  60


Leu Ala Ala Leu Gly Leu Leu Phe Phe Gln Tyr Tyr Gln Leu Ser Asn
65                  70                  75                  80


Thr Gly Gln Asp Thr Ile Ser Gln Met Glu Glu Arg Leu Gly Asn Thr
                85                  90                  95


Ser Gln Glu Leu Gln Ser Leu Gln Val Gln Asn Ile Lys Leu Ala Gly
            100                 105                 110


Ser Leu Gln His Val Ala Glu Lys Leu Cys Arg Glu Leu Tyr Asn Lys
        115                 120                 125


Ala Gly Gly Tyr Thr Arg Asn Met Val Pro Ala Ser Ala Ser Ser Glu
        130                 135                 140


Ser Leu Arg Gln Leu Pro His Met Gly Glu Ser Ala Ala Ala His Arg
145                 150                 155                 160


Cys Ser Pro Cys Thr Glu Gln Trp Lys Trp His Gly Asp Asn Cys Tyr
                165                 170                 175


Gln Phe Tyr Lys Asp Ser Lys Ser Trp Glu Asp Cys Lys Tyr Phe Cys
            180                 185                 190


Leu Ser Glu Asn Ser Thr Met Leu Lys Ile Asn Lys Gln Glu Asp Leu
        195                 200                 205


Glu Phe Ala Ala Ser Gln Ser Tyr Ser Glu Phe Phe Tyr Ser Tyr Trp
        210                 215                 220
```

```
Thr Gly Leu Leu Arg Pro Asp Ser Gly Lys Ala Trp Leu Trp Met Asp
225                 230                 235                 240


Gly Thr Pro Phe Thr Ser Glu Leu Phe His Ile Ile Ile Asp Val Thr
                245                 250                 255


Ser Pro Arg Ser Arg Asp Cys Val Ala Ile Leu Asn Gly Met Ile Phe
            260                 265                 270


Ser Lys Asp Cys Lys Glu Leu Lys Arg Cys Val Cys Glu Arg Arg Ala
        275                 280                 285


Gly Met Val Lys Pro Glu Ser Leu His Val Pro Pro Glu Thr Leu Gly
    290                 295                 300


Glu Gly Asp Met His His His His His His
305                 310
```

<210> 26
<211> 2125
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> n = a or c or g or t

<220>
<221> CDS
<222> (82)..(822)
<223> Xaa = Unknown or other

<400> 26

```
tgcttcctga actagctcac agtagcccgg cggcccaggg caatccgacc acatttcact      60

ctcaccgctg taggaatcca g atg cag gcc aag tac agc agc acg agg gac     111
                        Met Gln Ala Lys Tyr Ser Ser Thr Arg Asp
                         1               5                  10

atg ctg gat gat gat ggg gac acc acc atg agc ctg cat tct caa gcc     159
Met Leu Asp Asp Asp Gly Asp Thr Thr Met Ser Leu His Ser Gln Ala
                15                  20                  25

tct gcc aca act cgg cat cca gag ccc cgg cgc aca gtt ttt cag tac     207
Ser Ala Thr Thr Arg His Pro Glu Pro Arg Arg Thr Val Phe Gln Tyr
            30                  35                  40

tac cag ctc tcc aat act ggt caa gac acc att tct caa atg gaa gaa     255
Tyr Gln Leu Ser Asn Thr Gly Gln Asp Thr Ile Ser Gln Met Glu Glu
        45                  50                  55

aga tta gga aat acg tcc caa gag ttg caa tct ctt caa gtc cag aat     303
Arg Leu Gly Asn Thr Ser Gln Glu Leu Gln Ser Leu Gln Val Gln Asn
    60                  65                  70
```

```
ata aag ctt gca gga agt ctg cag cat gtg gct gaa aaa ctc tgt cgt    351
Ile Lys Leu Ala Gly Ser Leu Gln His Val Ala Glu Lys Leu Cys Arg
75              80                  85                  90

gag ctg tat aac aaa gct gga gca cac agg tgc agc cct tgt aca gaa    399
Glu Leu Tyr Asn Lys Ala Gly Ala His Arg Cys Ser Pro Cys Thr Glu
            95                  100                 105

caa tgg aaa tgg cat gga gac aat tgc tac cag ttc tat aaa gac agc    447
Gln Trp Lys Trp His Gly Asp Asn Cys Tyr Gln Phe Tyr Lys Asp Ser
            110                 115                 120

aaa agt tgg gag gac tgt aaa tat ttc tgc ctt agt gaa aac tct acc    495
Lys Ser Trp Glu Asp Cys Lys Tyr Phe Cys Leu Ser Glu Asn Ser Thr
            125                 130                 135

atg ctg aag ata aac aaa caa gaa gac ctg gaa ttt gcc gcg tct cag    543
Met Leu Lys Ile Asn Lys Gln Glu Asp Leu Glu Phe Ala Ala Ser Gln
        140             145                 150

agc tac tct gag ttt ttc tac tct tat tgg aca ggg ctt ttg cgc cct    591
Ser Tyr Ser Glu Phe Phe Tyr Ser Tyr Trp Thr Gly Leu Leu Arg Pro
155             160                 165                 170

gac agt ggc aag gcc tgg ctg tgg atg gat gga acc cct ttc act tct    639
Asp Ser Gly Lys Ala Trp Leu Trp Met Asp Gly Thr Pro Phe Thr Ser
                175                 180                 185

gaa ctg ttc cat att ata ata gat gtc acc agc cca aga agc aga gac    687
Glu Leu Phe His Ile Ile Ile Asp Val Thr Ser Pro Arg Ser Arg Asp
                190                 195                 200

tgt gtg gcc atc ctt aat ggg atg atc ttc tca aag gac tgc aaa gaa    735
Cys Val Ala Ile Leu Asn Gly Met Ile Phe Ser Lys Asp Cys Lys Glu
            205                 210                 215

ttg aag cgt tgt gtc tgt gag aga agg gca gga atg gtg aag cca gag    783
Leu Lys Arg Cys Val Cys Glu Arg Arg Ala Gly Met Val Lys Pro Glu
        220                 225                 230

agc ctc cat gtc ccc cct gaa aca tta ggc gaa ggt gac tgattcgccc     832
Ser Leu His Val Pro Pro Glu Thr Leu Gly Glu Gly Asp
235                 240                 245

tctgcaacta caaatagcag agtgagccag gcggtgccaa agcaaggggc agttgagaca    892

ttgggaaatg gaacataatc aggaaagact atctctctga ctagtacaaa atgggttctc    952

gtgtttcctg ttcaggatca ccagcatttc tgagcttggg tttatgcacg tatttaacag   1012

tcacaagaag tcttatttac atgccaccaa ccaacctcag aaacccataa tgtcatctgc    1072

cttcttggct tagagataac ttttagctct ctttcttctc aatgtctaat atcacctccc    1132

tgtttтcatg tcttccttac acttggtgga ataagaaact ttttgaagta gaggaaatac    1192

attgaggtaa catccttttc tctgacagtc aagtagtcca tcagaaattg gcagtcactt    1252

cccagattgt accagcaaat acacaaggaa ttcttttttgt ttgtttcagt tcatactagt    1312

cccttcccaa tccatcagta aagaccccat ctgccttgtc catgccgttt cccaacaggg    1372

atgtcacttg atatgagaat ctcaaatctc aatgccttat aagcattcct tcctgtgtcc    1432
```

```
attaagactc tgataattgt ctcccctcca taggaatttc tcccaggaaa gaaatatatc   1492

cccatctccg tttcatatca gaactaccgt ccccgatatt cccttcagag agattaaaga   1552

ccagaaaaaa gtgagcctct tcatctgcac ctgtaatagt ttcagttcct attttcttcc   1612

attgacccat atttatacct ttcaggtact gaagatttaa taataataaa tgtaaatact   1672

gtgaagtgtg tgtgattta caatgggactt atggttggtg ggaaaattca gcatggaaat   1732

gcttttcaaa atatgatagc ggtcattatt ttgattgtgc cttactgaaa gttttttgggg   1792

aatttacaag agtactgatt acatgattat ctggagaaaa taagatgtct ttgaaataca   1852

tgttggcttc aagaaaacag ttttaacgtt ttcctaaaat gaaatctttt gaggtgagct   1912

tatggcatca acacatggtt gatgaggaag ctgagttgca ttagtgcaca tgatttccag   1972

tcaggtcatg ggaaatgaac agagacagtg acatctttgt agctgctcct ttgtgaggca   2032

cttctttctt gagatgactc catgcacaaa tataacaggg atcattggga atgacaccat   2092

cacagccacc aagnttattg ggttactgat aat                               2125
```

```
<210>  27
<211>  247
<212>  PRT
<213>  Homo sapiens

<220>
<221>  misc_feature
<223>  n = a or c or g or t

<400>  27
```

```
Met Gln Ala Lys Tyr Ser Ser Thr Arg Asp Met Leu Asp Asp Gly
1               5                   10                  15

Asp Thr Thr Met Ser Leu His Ser Gln Ala Ser Ala Thr Thr Arg His
                20                  25                  30

Pro Glu Pro Arg Arg Thr Val Phe Gln Tyr Tyr Gln Leu Ser Asn Thr
        35                  40                  45

Gly Gln Asp Thr Ile Ser Gln Met Glu Glu Arg Leu Gly Asn Thr Ser
        50                  55                  60

Gln Glu Leu Gln Ser Leu Gln Val Gln Asn Ile Lys Leu Ala Gly Ser
65                  70                  75                  80

Leu Gln His Val Ala Glu Lys Leu Cys Arg Glu Leu Tyr Asn Lys Ala
                85                  90                  95

Gly Ala His Arg Cys Ser Pro Cys Thr Glu Gln Trp Lys Trp His Gly
            100                 105                 110
```

```
Asp Asn Cys Tyr Gln Phe Tyr Lys Asp Ser Lys Ser Trp Glu Asp Cys
        115                 120                 125


Lys Tyr Phe Cys Leu Ser Glu Asn Ser Thr Met Leu Lys Ile Asn Lys
    130                 135                 140


Gln Glu Asp Leu Glu Phe Ala Ala Ser Gln Ser Tyr Ser Glu Phe Phe
145                 150                 155                 160


Tyr Ser Tyr Trp Thr Gly Leu Leu Arg Pro Asp Ser Gly Lys Ala Trp
                165                 170                 175


Leu Trp Met Asp Gly Thr Pro Phe Thr Ser Glu Leu Phe His Ile Ile
            180                 185                 190


Ile Asp Val Thr Ser Pro Arg Ser Arg Asp Cys Val Ala Ile Leu Asn
        195                 200                 205


Gly Met Ile Phe Ser Lys Asp Cys Lys Glu Leu Lys Arg Cys Val Cys
    210                 215                 220


Glu Arg Arg Ala Gly Met Val Lys Pro Glu Ser Leu His Val Pro Pro
225                 230                 235                 240


Glu Thr Leu Gly Glu Gly Asp
                245


<210>  28
<211>  5059
<212>  DNA
<213>  Homo sapiens

<220>
<221>  CDS
<222>  (199)..(2457)

<400>  28
cgggaggaat ggaaggagaa ggcggaatgt gggagggctc aggggatgt gggagggacg      60

aacggagaag ggggagagag ggggtccag tctcccctgg ccgagcattt tttttttttgg      120

aagtcctagg actgatctcc aggaccagca ctcttctccc agcccttagg gtcctgctcg     180

gccaaggcct tccctgcc atg cga cct gtc agt gtc tgg cag tgg agc ccc     231
                     Met Arg Pro Val Ser Val Trp Gln Trp Ser Pro
                      1               5               10

tgg ggg ctg ctg ctg tgc ctg ctg tgc agt tcg tgc ttg ggg tct ccg     279
Trp Gly Leu Leu Leu Cys Leu Leu Cys Ser Ser Cys Leu Gly Ser Pro
            15              20              25

tcc cct tcc acg ggc cct gag aag aag gcc ggg agc cag ggg ctt cgg     327
Ser Pro Ser Thr Gly Pro Glu Lys Lys Ala Gly Ser Gln Gly Leu Arg
        30              35              40
```

```
ttc cgg ctg gct ggc ttc ccc agg aag ccc tac gag ggc cgc gtg gag      375
Phe Arg Leu Ala Gly Phe Pro Arg Lys Pro Tyr Glu Gly Arg Val Glu
    45                  50                  55

ata cag cga gct ggt gaa tgg ggc acc atc tgc gat gat gac ttc acg      423
Ile Gln Arg Ala Gly Glu Trp Gly Thr Ile Cys Asp Asp Asp Phe Thr
60                  65                  70                  75

ctg cag gct gcc cac atc ctc tgc cgg gag ctg ggc ttc aca gag gcc      471
Leu Gln Ala Ala His Ile Leu Cys Arg Glu Leu Gly Phe Thr Glu Ala
                80                  85                  90

aca ggc tgg acc cac agt gcc aaa tat ggc cct gga aca ggc cgc atc      519
Thr Gly Trp Thr His Ser Ala Lys Tyr Gly Pro Gly Thr Gly Arg Ile
                95                  100                 105

tgg ctg gac aac ttg agc tgc agt ggg acc gag cag agt gtg act gaa      567
Trp Leu Asp Asn Leu Ser Cys Ser Gly Thr Glu Gln Ser Val Thr Glu
            110                 115                 120

tgt gcc tcc cgg ggc tgg ggg aac agt gac tgt acg cac gat gag gat      615
Cys Ala Ser Arg Gly Trp Gly Asn Ser Asp Cys Thr His Asp Glu Asp
        125                 130                 135

gct ggg gtc atc tgc aaa gac cag cgc ctc cct ggc ttc tcg gac tcc      663
Ala Gly Val Ile Cys Lys Asp Gln Arg Leu Pro Gly Phe Ser Asp Ser
    140                 145                 150                 155

aat gtc att gag gta gag cat cac ctg caa gtg gag·gag gtg cga att      711
Asn Val Ile Glu Val Glu His His Leu Gln Val Glu Glu Val Arg Ile
                160                 165                 170

cga ccc gcc gtt ggg tgg ggc aga cga ccc ctg ccc gtg acg gag ggg      759
Arg Pro Ala Val Gly Trp Gly Arg Arg Pro Leu Pro Val Thr Glu Gly
                175                 180                 185

ctg gtg gaa gtc agg ctt cct gac ggc tgg tcg caa gtg tgc gac aaa      807
Leu Val Glu Val Arg Leu Pro Asp Gly Trp Ser Gln Val Cys Asp Lys
            190                 195                 200

ggc tgg agc gcc cac aac agc cac gtg gtc tgc ggg atg ctg ggc ttc      855
Gly Trp Ser Ala His Asn Ser His Val Val Cys Gly Met Leu Gly Phe
        205                 210                 215

ccc agc gaa aag agg gtc aac gcg gcc ttc tac agg ctg cta gcc caa      903
Pro Ser Glu Lys Arg Val Asn Ala Ala Phe Tyr Arg Leu Leu Ala Gln
220                 225                 230                 235

cgg cag caa cac tcc ttt ggt ctg cat ggg gtg gcg tgc gtg ggc acg      951
Arg Gln Gln His Ser Phe Gly Leu His Gly Val Ala Cys Val Gly Thr
                240                 245                 250

gag gcc cac ctc tcc ctc tgt tcc ctg gag ttc tat cgt gcc aat gac      999
Glu Ala His Leu Ser Leu Cys Ser Leu Glu Phe Tyr Arg Ala Asn Asp
            255                 260                 265

acc gcc agg tgc cct ggg ggg ggc cct gca gtg gtg agc tgt gtg cca     1047
Thr Ala Arg Cys Pro Gly Gly Gly Pro Ala Val Val Ser Cys Val Pro
        270                 275                 280

ggc cct gtc tac gcg gca tcc agt ggc cag aag aag caa caa cag tcg     1095
Gly Pro Val Tyr Ala Ala Ser Ser Gly Gln Lys Lys Gln Gln Gln Ser
    285                 290                 295
```

```
aag cct cag ggg gag gtc cgt gtc cgt cta aag ggc ggc gcc cac cct    1143
Lys Pro Gln Gly Glu Val Arg Val Arg Leu Lys Gly Gly Ala His Pro
300             305             310             315

gga gag ggc cgg gta gaa gtc ctg aag gcc agc aca tgg ggc aca gtc    1191
Gly Glu Gly Arg Val Glu Val Leu Lys Ala Ser Thr Trp Gly Thr Val
            320             325             330

tgt tac cgc aag tgg gac ctg cat gca gcc agc gtg gtg tgt cgg gag    1239
Cys Tyr Arg Lys Trp Asp Leu His Ala Ala Ser Val Val Cys Arg Glu
                335             340             345

ctg ggc ttc ggg agt gct cga gaa gct ctg agt ggc gct cgc atg ggg    1287
Leu Gly Phe Gly Ser Ala Arg Glu Ala Leu Ser Gly Ala Arg Met Gly
            350             355             360

cag ggc atg ggt gct atc cac ctg agt gaa gtt cgc tgc tct gga cag    1335
Gln Gly Met Gly Ala Ile His Leu Ser Glu Val Arg Cys Ser Gly Gln
        365             370             375

gag ctc tcc ctc tgg aag tgc ccc cac aag aac atc aca gct gag gat    1383
Glu Leu Ser Leu Trp Lys Cys Pro His Lys Asn Ile Thr Ala Glu Asp
380             385             390             395

tgt tca cat agc cag gat gcc ggg gtc cgg tgc aac cta cct tac act    1431
Cys Ser His Ser Gln Asp Ala Gly Val Arg Cys Asn Leu Pro Tyr Thr
                400             405             410

ggg gca gag acc agg atc cga ctc agt ggg ggc cgc agc caa cat gag    1479
Gly Ala Glu Thr Arg Ile Arg Leu Ser Gly Gly Arg Ser Gln His Glu
            415             420             425

ggg cga gtc gag gtg caa ata ggg gga cct ggg ccc ctt cgc tgg ggc    1527
Gly Arg Val Glu Val Gln Ile Gly Gly Pro Gly Pro Leu Arg Trp Gly
            430             435             440

ctc atc tgt ggg gat gac tgg ggg acc ctg gag gcc atg gtg gcc tgt    1575
Leu Ile Cys Gly Asp Asp Trp Gly Thr Leu Glu Ala Met Val Ala Cys
            445             450             455

agg caa ctg ggt ctg ggc tac gcc aac cac ggc ctg cag gag acc tgg    1623
Arg Gln Leu Gly Leu Gly Tyr Ala Asn His Gly Leu Gln Glu Thr Trp
460             465             470             475

tac tgg gac tct ggg aat ata aca gag gtg gtg atg agt gga gtg cgc    1671
Tyr Trp Asp Ser Gly Asn Ile Thr Glu Val Val Met Ser Gly Val Arg
                480             485             490

tgc aca ggg act gag ctg tcc ctg gat cag tgt gcc cat cat ggc acc    1719
Cys Thr Gly Thr Glu Leu Ser Leu Asp Gln Cys Ala His His Gly Thr
            495             500             505

cac atc acc tgc aag agg aca ggg acc cgc ttc act gct gga gtc atc    1767
His Ile Thr Cys Lys Arg Thr Gly Thr Arg Phe Thr Ala Gly Val Ile
            510             515             520

tgt tct gag act gca tca gat ctg ttg ctg cac tca gca ctg gtg cag    1815
Cys Ser Glu Thr Ala Ser Asp Leu Leu Leu His Ser Ala Leu Val Gln
        525             530             535

gag acc gcc tac atc gaa gac cgg ccc ctg cat atg ttg tac tgt gct    1863
Glu Thr Ala Tyr Ile Glu Asp Arg Pro Leu His Met Leu Tyr Cys Ala
540             545             550             555
```

```
gcg gaa gag aac tgc ctg gcc agc tca gcc cgc tca gcc aac tgg ccc      1911
Ala Glu Glu Asn Cys Leu Ala Ser Ser Ala Arg Ser Ala Asn Trp Pro
            560                 565                 570

tat ggt cac cgg cgt ctg ctc cga ttc tcc tcc cag atc cac aac ctg      1959
Tyr Gly His Arg Arg Leu Leu Arg Phe Ser Ser Gln Ile His Asn Leu
            575                 580                 585

gga cga gct gac ttc agg ccc aag gct ggg cgc cac tcc tgg gtg tgg      2007
Gly Arg Ala Asp Phe Arg Pro Lys Ala Gly Arg His Ser Trp Val Trp
            590                 595                 600

cac gag tgc cat ggg cat tac cac agc atg gac ttc ttc act cac tat      2055
His Glu Cys His Gly His Tyr His Ser Met Asp Phe Phe Thr His Tyr
            605                 610                 615

gat atc ctc acc cca aat ggc acc aag gtg gct gag ggc cac aaa gct      2103
Asp Ile Leu Thr Pro Asn Gly Thr Lys Val Ala Glu Gly His Lys Ala
620                 625                 630                 635

agt ttc tgt ctc gaa gac act gag tgt cag gag gat gtc tcc aag cgg      2151
Ser Phe Cys Leu Glu Asp Thr Glu Cys Gln Glu Asp Val Ser Lys Arg
                    640                 645                 650

tat gag tgt gcc aac ttt gga gag caa ggc atc act gtg ggt tgc tgg      2199
Tyr Glu Cys Ala Asn Phe Gly Glu Gln Gly Ile Thr Val Gly Cys Trp
                655                 660                 665

gat ctc tac cgg cat gac att gac tgt cag tgg att gac atc acg gat      2247
Asp Leu Tyr Arg His Asp Ile Asp Cys Gln Trp Ile Asp Ile Thr Asp
                670                 675                 680

gtg aag cca gga aac tac att ctc cag gtt gtc atc aac cca aac ttt      2295
Val Lys Pro Gly Asn Tyr Ile Leu Gln Val Val Ile Asn Pro Asn Phe
            685                 690                 695

gaa gta gca gag agt gac ttt acc aac aat gca atg aaa tgt aac tgc      2343
Glu Val Ala Glu Ser Asp Phe Thr Asn Asn Ala Met Lys Cys Asn Cys
700                 705                 710                 715

aaa tat gat gga cat aga atc tgg gtg cac aac tgc cac att ggt gat      2391
Lys Tyr Asp Gly His Arg Ile Trp Val His Asn Cys His Ile Gly Asp
                    720                 725                 730

gcc ttc agt gaa gag gcc aac agg agg ttt gaa cgc tac cct ggc cag      2439
Ala Phe Ser Glu Glu Ala Asn Arg Arg Phe Glu Arg Tyr Pro Gly Gln
                735                 740                 745

acc agc aac cag att atc taagtgccac tgccctctgc aaaccaccac            2487
Thr Ser Asn Gln Ile Ile
                750

tggcccctaa tggcaggggt ctgaggctgc cattacctca ggagcttacc aagaaaccca   2547

tgtcagcaac cgcactcatc agaccatgca ctatggatgt ggaactgtca agcagaagtt   2607

ttcaccctcc ttcagaggcc agctgtcagt atctgtagcc aagcatggga atctttgctc   2667

ccaggcccag caccgagcag aacagaccag agcccaccac accacaaaga gcagcacctg   2727

actaactgcc cacaaaagat ggcagcagct cattttcttt aataggaggt caggatggtc   2787

agctccagta tctcccctaa gtttagggggg atacagcttt acctctagcc ttttggtggg   2847
```

```
ggaaaagatc cagccctccc acctcatttt ttactataat atgttgctag gtataatttt   2907

attttatata aaaagtgttt ctgtgattct tcagagccca ggagtcagtg ctggtggttg   2967

gagggacctg cccccactgg ttcatttaac cctctgtctc ggtgccctca gaacctcagc   3027

cagaaaggca aggaggaaat cagagcagga gcctcatact cttggtgatc tattcattct   3087

gtgacctcag gggtcacata taaggtcagt gtttctcgtc cccgccggat ctgcactgcc   3147

aactgggatt gggttcgaac agcttcataa acatcttcag cattttgtac catctgctcc   3207

ccaatggcca aaatcacatc accaggccgc agaccagccc ggtgtgcagg ggagcccagg   3267

atgactttat ggatgagtac accatgctga acatcgggaa agcttggttc tcgaagctgt   3327

agttcagcaa ggatgctggg actcagggtc agcatcatca ccccaatgta gcgccgctgg   3387

gacccactga ttccggagga ggaattcttc tttcccccac gatgcagaaa ctctcgaaga   3447

cgatcagaag ggatggcaaa ggagattcca gctgtgacct tcatggtgtt cactccaatc   3507

acctccccat ccaggttaac caggggacct ccagagtttc caaaatcaat agctgcatca   3567

gtttgaatgt attccacatt ggtttggggg agtcccaggt ctctggctgg acgctgagca   3627

gagctaacaa tgccggatgt gatcgtgttc tgcagtgcaa agggacttcc catggcaaca   3687

acaaactccc cttgccggac atcagctgag cgtcccagag gcagcgtggg gagaggctcc   3747

ttagtctgaa tcctcagcgt tgcgatgtct gccacgggat ccacagctgt gaccacggcc   3807

tcatacgtgt cgccgcttag cagtctcaca cggactctgc gccgatcagc caccacatgg   3867

gcgttggtga caatgagccc atcggcagcc accacgaatc ctgagccgtt cgagatagcc   3927

acctcgcggc ccaagaaagg gtgccggtcc aggatctcga tatagaccac ggcaggtgct   3987

gtcttctcca ccacatctgc gatgaagttg tactgactcc ggggagaagc gggcggcggg   4047

ctaggacggg cggcgaggac ggccggagga ccccgacccc cgcccacaca caacaacagc   4107

actgccccc cagcgcccag cgccaccgcc agccacgcgc gcgaacgggt tccagagttc   4167

tctgaggcct cccgggtcct ggtatctggg gtcaccgcag tcagttgtgc ccggggaccc   4227

ggggtccag acgtcaggca tgctcggggt tcagtgaccc caacagacaa ccgggcccag   4287

agactggggg tcccataagt cactcgggcc cgggggtcag aagttcctga cgtcagcagg   4347

gcccggaggt caggggtcaa acgggggtctc ctcccccagc gaatgcccc caaagcccgc   4407

catgcccgaa ggctccagcc tgcacccgc cccgcccctcg gcgcagccat cagctccgcc   4467

ttggctgcct cctcgcccgc cctactcaga ggcggcaccc aggacgcgag caggcggaca   4527

gtaggacgcg gggcacgccg gtacctgaag tccttcagaa gtgcacgccg ggaccaggat   4587

tccggggaggc cgactcctcc ctgccccacg aatgccggga attgtggtct ccgccggacg   4647

cgagttgtga gacggcccaa ggggccgcgg ggtatgctgg gaccgctagc ccttccggcg   4707

cgcctcagga cttcgggtcc cctcaccccg ggcggatgcc caaagactcc gccttcccaa   4767
```

```
gagccctgc ggccgggcgc gaaaatggcg gcggcggcga cggccgggcg ctcctgaagc    4827

agcagttatg gagcttccct cagggccggg gccggagcgg ctctttgact cgcaccggta    4887

agagaccggg cgggaagaga ccgatccccg cgtgtctcg gccttcggcg cctgaccact     4947

tcgcctctcg ccccaggct tccgggtgac tgcttcctac tgctcgtgct gctgctctac     5007

gcgccagtcg ggttctgcct cctcgtcctg cgcctctttc tcgggatcca cg            5059
```

<210> 29
<211> 753
<212> PRT
<213> Homo sapiens

<400> 29

```
Met Arg Pro Val Ser Val Trp Gln Trp Ser Pro Trp Gly Leu Leu Leu
1               5                   10                  15

Cys Leu Leu Cys Ser Ser Cys Leu Gly Ser Pro Ser Pro Ser Thr Gly
            20                  25                  30

Pro Glu Lys Lys Ala Gly Ser Gln Gly Leu Arg Phe Arg Leu Ala Gly
        35                  40                  45

Phe Pro Arg Lys Pro Tyr Glu Gly Arg Val Glu Ile Gln Arg Ala Gly
    50                  55                  60

Glu Trp Gly Thr Ile Cys Asp Asp Asp Phe Thr Leu Gln Ala Ala His
65                  70                  75                  80

Ile Leu Cys Arg Glu Leu Gly Phe Thr Glu Ala Thr Gly Trp Thr His
                85                  90                  95

Ser Ala Lys Tyr Gly Pro Gly Thr Gly Arg Ile Trp Leu Asp Asn Leu
                100                 105                 110

Ser Cys Ser Gly Thr Glu Gln Ser Val Thr Glu Cys Ala Ser Arg Gly
            115                 120                 125

Trp Gly Asn Ser Asp Cys Thr His Asp Glu Asp Ala Gly Val Ile Cys
        130                 135                 140

Lys Asp Gln Arg Leu Pro Gly Phe Ser Asp Ser Asn Val Ile Glu Val
145                 150                 155                 160

Glu His His Leu Gln Val Glu Glu Val Arg Ile Arg Pro Ala Val Gly
                165                 170                 175

Trp Gly Arg Arg Pro Leu Pro Val Thr Glu Gly Leu Val Glu Val Arg
```

```
                180                    185                    190

    Leu Pro Asp Gly Trp Ser Gln Val Cys Asp Lys Gly Trp Ser Ala His
            195                 200                 205

    Asn Ser His Val Val Cys Gly Met Leu Gly Phe Pro Ser Glu Lys Arg
            210                 215                 220

    Val Asn Ala Ala Phe Tyr Arg Leu Leu Ala Gln Arg Gln Gln His Ser
    225                 230                 235                 240

    Phe Gly Leu His Gly Val Ala Cys Val Gly Thr Glu Ala His Leu Ser
                    245                 250                 255

    Leu Cys Ser Leu Glu Phe Tyr Arg Ala Asn Asp Thr Ala Arg Cys Pro
                    260                 265                 270

    Gly Gly Gly Pro Ala Val Val Ser Cys Val Pro Gly Pro Val Tyr Ala
            275                 280                 285

    Ala Ser Ser Gly Gln Lys Lys Gln Gln Gln Ser Lys Pro Gln Gly Glu
            290                 295                 300

    Val Arg Val Arg Leu Lys Gly Gly Ala His Pro Gly Glu Gly Arg Val
    305                 310                 315                 320

    Glu Val Leu Lys Ala Ser Thr Trp Gly Thr Val Cys Tyr Arg Lys Trp
                    325                 330                 335

    Asp Leu His Ala Ala Ser Val Val Cys Arg Glu Leu Gly Phe Gly Ser
            340                 345                 350

    Ala Arg Glu Ala Leu Ser Gly Ala Arg Met Gly Gln Gly Met Gly Ala
            355                 360                 365

    Ile His Leu Ser Glu Val Arg Cys Ser Gly Gln Glu Leu Ser Leu Trp
            370                 375                 380

    Lys Cys Pro His Lys Asn Ile Thr Ala Glu Asp Cys Ser His Ser Gln
    385                 390                 395                 400

    Asp Ala Gly Val Arg Cys Asn Leu Pro Tyr Thr Gly Ala Glu Thr Arg
                    405                 410                 415

    Ile Arg Leu Ser Gly Gly Arg Ser Gln His Glu Gly Arg Val Glu Val
                    420                 425                 430
```

Gln Ile Gly Gly Pro Gly Pro Leu Arg Trp Gly Leu Ile Cys Gly Asp
    435   440   445

Asp Trp Gly Thr Leu Glu Ala Met Val Ala Cys Arg Gln Leu Gly Leu
    450   455   460

Gly Tyr Ala Asn His Gly Leu Gln Glu Thr Trp Tyr Trp Asp Ser Gly
465   470   475   480

Asn Ile Thr Glu Val Val Met Ser Gly Val Arg Cys Thr Gly Thr Glu
                485   490   495

Leu Ser Leu Asp Gln Cys Ala His His Gly Thr His Ile Thr Cys Lys
            500   505   510

Arg Thr Gly Thr Arg Phe Thr Ala Gly Val Ile Cys Ser Glu Thr Ala
            515   520   525

Ser Asp Leu Leu Leu His Ser Ala Leu Val Gln Glu Thr Ala Tyr Ile
            530   535   540

Glu Asp Arg Pro Leu His Met Leu Tyr Cys Ala Ala Glu Glu Asn Cys
545   550   555   560

Leu Ala Ser Ser Ala Arg Ser Ala Asn Trp Pro Tyr Gly His Arg Arg
                565   570   575

Leu Leu Arg Phe Ser Ser Gln Ile His Asn Leu Gly Arg Ala Asp Phe
            580   585   590

Arg Pro Lys Ala Gly His Ser Trp Val Trp His Glu Cys His Gly
            595   600   605

His Tyr His Ser Met Asp Phe Phe Thr His Tyr Asp Ile Leu Thr Pro
    610   615   620

Asn Gly Thr Lys Val Ala Glu Gly His Lys Ala Ser Phe Cys Leu Glu
625   630   635   640

Asp Thr Glu Cys Gln Glu Asp Val Ser Lys Arg Tyr Glu Cys Ala Asn
                645   650   655

Phe Gly Glu Gln Gly Ile Thr Val Gly Cys Trp Asp Leu Tyr Arg His
            660   665   670

Asp Ile Asp Cys Gln Trp Ile Asp Ile Thr Asp Val Lys Pro Gly Asn
    675   680   685

```
Tyr Ile Leu Gln Val Val Ile Asn Pro Asn Phe Glu Val Ala Glu Ser
    690                 695             700


Asp Phe Thr Asn Asn Ala Met Lys Cys Asn Cys Lys Tyr Asp Gly His
705                 710             715                 720


Arg Ile Trp Val His Asn Cys His Ile Gly Asp Ala Phe Ser Glu Glu
            725             730                 735


Ala Asn Arg Arg Phe Glu Arg Tyr Pro Gly Gln Thr Ser Asn Gln Ile
            740             745                 750


Ile
```

```
<210>    30
<211>    4552
<212>    DNA
<213>    Homo sapiens

<220>
<221>    CDS
<222>    (127)..(1950)

<400>    30
gggagagagg gggtccagt ctcccctggc cgagcatttt tttttttggaa gtcctaggac    60

taatctccag gaccagcact cttctcccag cccttagggt cctgctcggc caaggccttc    120

cctgcc atg cga cct gtc agt gtc tgg cag tgg agc ccc tgg ggg ctg      168
       Met Arg Pro Val Ser Val Trp Gln Trp Ser Pro Trp Gly Leu
       1               5                   10

ctg ctg tgc ctg ctg tgc agt tcg tgc ttg ggg tct cca tcc cct tcc    216
Leu Leu Cys Leu Leu Cys Ser Ser Cys Leu Gly Ser Pro Ser Pro Ser
15              20                  25                  30

acg ggc cct gag aag aag gcc ggg agc cag ggg ctt cgg ttc cgg ctg    264
Thr Gly Pro Glu Lys Lys Ala Gly Ser Gln Gly Leu Arg Phe Arg Leu
            35                  40                  45

gct ggc ttc ccc agg aag ccc tac gag ggc cgc gtg gag ata cag cga    312
Ala Gly Phe Pro Arg Lys Pro Tyr Glu Gly Arg Val Glu Ile Gln Arg
            50                  55                  60

gct ggt gaa tgg ggc acc atc tgc gat gat gac ttc acg ctg cag gct    360
Ala Gly Glu Trp Gly Thr Ile Cys Asp Asp Asp Phe Thr Leu Gln Ala
            65                  70                  75

gcc cac atc ctc tgc cgg gag ctg ggc ttc aca gag gcc aca ggc tgg    408
Ala His Ile Leu Cys Arg Glu Leu Gly Phe Thr Glu Ala Thr Gly Trp
        80                  85                  90

acc cac agt gcc aaa tat ggc cct gga aca ggc cgc atc tgg ctg gac    456
Thr His Ser Ala Lys Tyr Gly Pro Gly Thr Gly Arg Ile Trp Leu Asp
95                  100             105                 110

aac ttg agc tgc agt ggg acc gag cag agt gtg act gaa tgt gcc tcc    504
```

```
Asn Leu Ser Cys Ser Gly Thr Glu Gln Ser Val Thr Glu Cys Ala Ser
                    115                 120                 125

cgg ggc tgg ggg aac agt gac tgt acg cac gat gag gat gct ggg gtc    552
Arg Gly Trp Gly Asn Ser Asp Cys Thr His Asp Glu Asp Ala Gly Val
                130                 135                 140

atc tgc aaa gac cag cgc ctc cct ggc ttc tcg gac tcc aat gtc att    600
Ile Cys Lys Asp Gln Arg Leu Pro Gly Phe Ser Asp Ser Asn Val Ile
                145                 150                 155

gag gcc cgt gtc cgt cta aag ggc ggc gcc cac cct gga gag ggc cgg    648
Glu Ala Arg Val Arg Leu Lys Gly Gly Ala His Pro Gly Glu Gly Arg
            160                 165                 170

gta gaa gtc ctg aag gcc agc aca tgg ggc aca gtc tgt gac cgc aag    696
Val Glu Val Leu Lys Ala Ser Thr Trp Gly Thr Val Cys Asp Arg Lys
175                 180                 185                 190

tgg gac ctg cat gca gcc agc gtg gtg tgt cgg gag ctg ggc ttc ggg    744
Trp Asp Leu His Ala Ala Ser Val Val Cys Arg Glu Leu Gly Phe Gly
                    195                 200                 205

agt gct cga gaa gct ctg agt ggc gct cgc atg ggg cag gag atg ggt    792
Ser Ala Arg Glu Ala Leu Ser Gly Ala Arg Met Gly Gln Gly Met Gly
                210                 215                 220

gct atc cac ctg agt gaa gtt cgc tgc tct gga cag gag ctc tcc ctc    840
Ala Ile His Leu Ser Glu Val Arg Cys Ser Gly Gln Glu Leu Ser Leu
                225                 230                 235

tgg aag tgc ccc cac aag aac atc aca gct gag gat tgt tca cat agc    888
Trp Lys Cys Pro His Lys Asn Ile Thr Ala Glu Asp Cys Ser His Ser
            240                 245                 250

cag gat gcc ggg gtc cgg tgc aac cta cct tac act ggg gca gag acc    936
Gln Asp Ala Gly Val Arg Cys Asn Leu Pro Tyr Thr Gly Ala Glu Thr
255                 260                 265                 270

agg atc cga ctc agt ggg ggc cgc agc caa cat gag ggg cga gtc gag    984
Arg Ile Arg Leu Ser Gly Gly Arg Ser Gln His Glu Gly Arg Val Glu
                275                 280                 285

gtg caa ata ggg gga cct ggg ccc ctt cgc tgg ggc ctc atc tgt ggg   1032
Val Gln Ile Gly Gly Pro Gly Pro Leu Arg Trp Gly Leu Ile Cys Gly
                290                 295                 300

gat gac tgg ggg acc ctg gag gcc atg gtg gcc tgt agg caa ctg ggt   1080
Asp Asp Trp Gly Thr Leu Glu Ala Met Val Ala Cys Arg Gln Leu Gly
            305                 310                 315

ctg ggc tac gcc aac cac ggc ctg cag gag acc tgg tac tgg gac tct   1128
Leu Gly Tyr Ala Asn His Gly Leu Gln Glu Thr Trp Tyr Trp Asp Ser
            320                 325                 330

ggg aat ata aca gag gtg gtg atg agt gga gtg cgc tgc aca ggg act   1176
Gly Asn Ile Thr Glu Val Val Met Ser Gly Val Arg Cys Thr Gly Thr
335                 340                 345                 350

gag ctg tcc ctg gat cag tgt gcc cat cat ggc acc cac atc acc tgc   1224
Glu Leu Ser Leu Asp Gln Cys Ala His His Gly Thr His Ile Thr Cys
                355                 360                 365
```

```
aag agg aca ggg acc cgc ttc act gct gga gtc atc tgt tct gag act   1272
Lys Arg Thr Gly Thr Arg Phe Thr Ala Gly Val Ile Cys Ser Glu Thr
            370             375             380

gca tca gat ctg ttg ctg cac tca gca ctg gtg cag gag acc gcc tac   1320
Ala Ser Asp Leu Leu Leu His Ser Ala Leu Val Gln Glu Thr Ala Tyr
        385             390             395

atc gaa gac cgg ccc ctg cat atg ttg tac tgt gct gcg gaa gag aac   1368
Ile Glu Asp Arg Pro Leu His Met Leu Tyr Cys Ala Ala Glu Glu Asn
        400             405             410

tgc ctg gcc agc tca gcc cgc tca gcc aac tgg ccc tat ggt cac cgg   1416
Cys Leu Ala Ser Ser Ala Arg Ser Ala Asn Trp Pro Tyr Gly His Arg
415             420             425             430

cgt ctg ctc cga ttc tcc tcc cag atc cac aac ctg gga cga gct gac   1464
Arg Leu Leu Arg Phe Ser Ser Gln Ile His Asn Leu Gly Arg Ala Asp
                435             440             445

ttc agg ccc aag gct ggg cgc cac tcc tgg gtg tgg cac gag tgc cat   1512
Phe Arg Pro Lys Ala Gly Arg His Ser Trp Val Trp His Glu Cys His
            450             455             460

ggg cat tac cac agc atg gac ttc ttc act cac tat gat atc ctc acc   1560
Gly His Tyr His Ser Met Asp Phe Phe Thr His Tyr Asp Ile Leu Thr
            465             470             475

cca aat ggc acc aag gtg gct gag ggc cac aaa gct agt ttc tgt ctc   1608
Pro Asn Gly Thr Lys Val Ala Glu Gly His Lys Ala Ser Phe Cys Leu
        480             485             490

gaa gac act gag tgt cag gag gat gtc tcc aag cgg tat gag tgt gcc   1656
Glu Asp Thr Glu Cys Gln Glu Asp Val Ser Lys Arg Tyr Glu Cys Ala
        495             500             505             510

aac ttt gga gag caa ggc atc act gtg ggt tgc tgg gat ctc tac cgg   1704
Asn Phe Gly Glu Gln Gly Ile Thr Val Gly Cys Trp Asp Leu Tyr Arg
                515             520             525

cat gac att gac tgt cag tgg att gac atc acg gat gtg aag cca gga   1752
His Asp Ile Asp Cys Gln Trp Ile Asp Ile Thr Asp Val Lys Pro Gly
                530             535             540

aac tac att ctc cag gtt gtc atc aac cca aac ttt gaa gta gca gag   1800
Asn Tyr Ile Leu Gln Val Val Ile Asn Pro Asn Phe Glu Val Ala Glu
            545             550             555

agt gac ttt acc aac aat gca atg aaa tgt aac tgc aaa tat gat gga   1848
Ser Asp Phe Thr Asn Asn Ala Met Lys Cys Asn Cys Lys Tyr Asp Gly
        560             565             570

cat aga atc tgg gtg cac aac tgc cac att ggt gat gcc ttc agt gaa   1896
His Arg Ile Trp Val His Asn Cys His Ile Gly Asp Ala Phe Ser Glu
575             580             585             590

gag gcc aac agg agg ttt gaa cgc tac cct ggc cag acc agc aac cag   1944
Glu Ala Asn Arg Arg Phe Glu Arg Tyr Pro Gly Gln Thr Ser Asn Gln
                595             600             605

att atc taagtgccac tgccctctgc aaaccaccac tggcccctaa tggcaggggt   2000
Ile Ile
```

```
ctgaggctgc cattacctca ggagcttacc aagaaaccca tgtcagcaac cgcactcatc   2060

agaccatgca ctatggatgt ggaactgtca agcagaagtt ttcaccctcc ttcagaggcc   2120

agctgtcagt atctgtagcc aagcatggga atctttgctc ccaggcccag caccgagcag   2180

aacagaccag agcccaccac accacaaaga gcagcacctg actaactgcc cacaaaagat   2240

ggcagcagct cattttcttt aataggaggt caggatggtc agctccagta tctcccctaa   2300

gtttagggg atacagcttt acctctagcc ttttggtggg ggaaaagatc cagccctccc   2360

acctcatttt ttactataat atgttgctag gtataatttt attttatata aaaagtgttt   2420

ctgtgattct tcagagccca ggagtcagtg ctggtggttg gagcgacctg cccccactgg   2480

ttcatttaac cctctgtctc ggtgccctca gaacctcagc cagaaaggca aggaggaaat   2540

cagagcagga gcctcatact cttggtgatc tattcattct gtgacctcag gggtcacata   2600

taaggtcagt gtttctcgtc cccgccggat ctgcactgcc aactgggatt gggttcgaac   2660

agcttcataa acatcttcag cattttgtac catctgctcc ccaatggcca aaatcacatc   2720

accaggccgc agaccagccc ggtgtgcagg ggagcccagg atgactttat ggatgagtac   2780

accatgctga acatcgggaa agcttggttc tcgaagctgt agttcagcaa ggatgctggg   2840

actcagggtc agcatcatca ccccaatgta gcgccgctgg gacccactga ttccggagga   2900

ggaattcttc ttttccccac gatgcagaaa ctctcgaaga cgatcagaag ggatggcaaa   2960

ggagattcca gctgtgacct tcatggtgtt cactccaatc acctccccat ccaggttaac   3020

caggggacct ccagagtttc caaaatcaat agctgcatca gtttgaatgt attccacatt   3080

ggtttggggg agtcccaggt ctctggctgg acgctgagca gagctaacaa tgccggatgt   3140

gatcgtgttc tgcagtgcaa agggacttcc catggcaaca acaaactccc cctgccggac   3200

atcagctgag cgtcccagag gcagcgtggg gagaggctcc ttagtctgaa tcctcagcgt   3260

tgcgatgtct gccacgggat ccacagctgt gaccacggcc tcatacgtgt cgccgcttag   3320

cagtctcaca cggactctgc gccgatcagc caccacatgg gcgttggtga caatgagccc   3380

atcggcagcc accacgaatc ctgagccgtt cgagataggg acctcgcggc ccaagaaagg   3440

gtgccggtcc aggatctcga tatagaccac ggcaggtgtc gtcttctcca ccacatctgc   3500

gatgaagttg tactgactcc ggggagaagc gggcggcggg ctagggacgg cggcgaggac   3560

ggccggagga ccccgacccc cgccccacaa caacaacagc actgcccccc cagcgcccag   3620

cgccaccgcc agccacgcgc gcgaacgggt tccagagttc tctgaggcct cccgggtcct   3680

ggtatctggg gtcaccgcag tcagttgtgc ccggggaccc ggggtcccag acgtcaggca   3740

tgctcggggt tcagtgaccc caacagacaa ccgggcccag agactggggg tcccataagt   3800

cactcgggcc cgggggtcag aagttcctga cgtcagcagg gcccggaggt caggggtcaa   3860

acggggtctc ctcccccagc gaatgccccc caaagcccgc catgcccgaa ggctccagcc   3920
```

```
tgcaccccgc cccgccctcg gcgcagccat cagctccgcc ttggctgcct cctcgcccgc    3980

cctactcaga ggcggcaccc aggacgcgag caggcggaca gtaggacgcg ggcacgccg     4040

gtacctgaag tccttcagaa gtgcacgccg ggaccaggat tccgggaggc cgactcctcc    4100

ctgccccacg aatgccggga attgtggtct ccgccggacg cgagttgtga cacggcccaa    4160

ggggccgcgg ggtatgctgg gaccgctagc ccttccggcg cgcctcagga cttcgggtcc    4220

cctcaccccg ggcggatgcc caaagactcc gccttcccaa gagcccctgc ggccgggcgc    4280

gaaaatggcg gcgcgcggcga cggccgggcg ctcctgaagc agcagttatg gagcttccct    4340

cagggccggg gccggagcgg ctctttgact cgcaccggta agagacccgg cgggaagaga    4400

ccgatccccg cgtgctctcg gccttcggcg cctgaccact tcgcctctcg cccccaggct    4460

tccgggtgac tgcttcctac tgctcgtgct gctgctctac gcgccagtcg ggttctgcct    4520

cctcgtcctg cgcctcttc tcgggatcca cg                                   4552
```

<210> 31
<211> 608
<212> PRT
<213> Homo sapiens

<400> 31

```
Met Arg Pro Val Ser Val Trp Gln Trp Ser Pro Trp Gly Leu Leu Leu
1               5                   10                  15

Cys Leu Leu Cys Ser Ser Cys Leu Gly Ser Pro Ser Pro Ser Thr Gly
            20                  25                  30

Pro Glu Lys Lys Ala Gly Ser Gln Gly Leu Arg Phe Arg Leu Ala Gly
        35                  40                  45

Phe Pro Arg Lys Pro Tyr Glu Gly Arg Val Glu Ile Gln Arg Ala Gly
    50                  55                  60

Glu Trp Gly Thr Ile Cys Asp Asp Asp Phe Thr Leu Gln Ala Ala His
65                  70                  75                  80

Ile Leu Cys Arg Glu Leu Gly Phe Thr Glu Ala Thr Gly Trp Thr His
                85                  90                  95

Ser Ala Lys Tyr Gly Pro Gly Thr Gly Arg Ile Trp Leu Asp Asn Leu
            100                 105                 110

Ser Cys Ser Gly Thr Glu Gln Ser Val Thr Glu Cys Ala Ser Arg Gly
        115                 120                 125

Trp Gly Asn Ser Asp Cys Thr His Asp Glu Asp Ala Gly Val Ile Cys
```

```
              130                    135                    140

Lys Asp Gln Arg Leu Pro Gly Phe Ser Asp Ser Asn Val Ile Glu Ala
145                 150                 155                 160

Arg Val Arg Leu Lys Gly Gly Ala His Pro Gly Glu Gly Arg Val Glu
                165                 170                 175

Val Leu Lys Ala Ser Thr Trp Gly Thr Val Cys Asp Arg Lys Trp Asp
                180                 185                 190

Leu His Ala Ala Ser Val Val Cys Arg Glu Leu Gly Phe Gly Ser Ala
         195                 200                 205

Arg Glu Ala Leu Ser Gly Ala Arg Met Gly Gln Gly Met Gly Ala Ile
    210                 215                 220

His Leu Ser Glu Val Arg Cys Ser Gly Gln Glu Leu Ser Leu Trp Lys
225                 230                 235                 240

Cys Pro His Lys Asn Ile Thr Ala Glu Asp Cys Ser His Ser Gln Asp
                245                 250                 255

Ala Gly Val Arg Cys Asn Leu Pro Tyr Thr Gly Ala Glu Thr Arg Ile
                260                 265                 270

Arg Leu Ser Gly Gly Arg Ser Gln His Glu Gly Arg Val Glu Val Gln
    275                 280                 285

Ile Gly Gly Pro Gly Pro Leu Arg Trp Gly Leu Ile Cys Gly Asp Asp
    290                 295                 300

Trp Gly Thr Leu Glu Ala Met Val Ala Cys Arg Gln Leu Gly Leu Gly
305                 310                 315                 320

Tyr Ala Asn His Gly Leu Gln Glu Thr Trp Tyr Trp Asp Ser Gly Asn
                325                 330                 335

Ile Thr Glu Val Val Met Ser Gly Val Arg Cys Thr Gly Thr Glu Leu
                340                 345                 350

Ser Leu Asp Gln Cys Ala His His Gly Thr His Ile Thr Cys Lys Arg
    355                 360                 365

Thr Gly Thr Arg Phe Thr Ala Gly Val Ile Cys Ser Glu Thr Ala Ser
    370                 375                 380
```

```
Asp Leu Leu Leu His Ser Ala Leu Val Gln Glu Thr Ala Tyr Ile Glu
385                 390                 395                 400

Asp Arg Pro Leu His Met Leu Tyr Cys Ala Ala Glu Glu Asn Cys Leu
            405                 410                 415

Ala Ser Ser Ala Arg Ser Ala Asn Trp Pro Tyr Gly His Arg Arg Leu
            420                 425                 430

Leu Arg Phe Ser Ser Gln Ile His Asn Leu Gly Arg Ala Asp Phe Arg
            435                 440                 445

Pro Lys Ala Gly Arg His Ser Trp Val Trp His Glu Cys His Gly His
    450                 455                 460

Tyr His Ser Met Asp Phe Phe Thr His Tyr Asp Ile Leu Thr Pro Asn
465                 470                 475                 480

Gly Thr Lys Val Ala Glu Gly His Lys Ala Ser Phe Cys Leu Glu Asp
            485                 490                 495

Thr Glu Cys Gln Glu Asp Val Ser Lys Arg Tyr Glu Cys Ala Asn Phe
            500                 505                 510

Gly Glu Gln Gly Ile Thr Val Gly Cys Trp Asp Leu Tyr Arg His Asp
            515                 520                 525

Ile Asp Cys Gln Trp Ile Asp Ile Thr Asp Val Lys Pro Gly Asn Tyr
    530                 535                 540

Ile Leu Gln Val Val Ile Asn Pro Asn Phe Glu Val Ala Glu Ser Asp
545                 550                 555                 560

Phe Thr Asn Asn Ala Met Lys Cys Asn Cys Lys Tyr Asp Gly His Arg
                565                 570                 575

Ile Trp Val His Asn Cys His Ile Gly Asp Ala Phe Ser Glu Glu Ala
            580                 585                 590

Asn Arg Arg Phe Glu Arg Tyr Pro Gly Gln Thr Ser Asn Gln Ile Ile
            595                 600                 605
```

<210> 32
<211> 16545
<212> DNA
<213> Homo sapiens

<220>
<221> CDS

```
<222>  (862)..(14769)

<400>  32
aaagacagaa ccccagagaa aaacgctgcc aattcgttgc tttattgttc cctgcctggg       60

gacctcaata gccttttcca ttaaccttcc cttcttacgc aacggttaat gactttgggg      120

gttgttttgc tttctgtttc tgctgagtca ctaaattttg cctctttgtc cccaggtgct      180

gctcagcata aaagttaaaa gtgcaattca gggagtactg ggattctgtg tagagccgag      240

gaaaccattt ccctaagaga agctctgttc cttggcttgt ccttccttcc cgggaaggaa      300

gcttccgagg aacgaaggga gaagctttgt tttgcctgca gaagcagccc tgtgctcggc      360

tgagggttct cagctggctg tgaactgcgg agcattgtag gcgcctggct ggctcaggcc      420

aatgcagaag tctctccctt ctccaaagac ccaaatcccc acagaaccag cttcgagtta      480

ctttcccttc aaggggatta aaataattgt gatttgttgc gctctccgtt cgcggtggta      540

ttttcctgtt gtgttaaatg cctcttatta agtaatagat gtgatttatg tgaacgacga      600

aggggtgtgt ggtggattcg gtgattaatc agtgaattcc catccgctgg catctctcac      660

tgcccctctt gcgtgatgta agatcagacg taccctgcat tgaaaagtca agacacacgg      720

gcgtctcgct cgcgctcaca cacgctctgc ctcctctctc cagcacgcgc gcatccctcc      780

accttccaca tcctgctcca ggcaggagaa ggctgactgg ctggactcat tgagctgaag      840

aatttccagt gacatttgta a atg acg ccg ctc ggt tcc agg ctc caa gcg      891
                         Met Thr Pro Leu Gly Ser Arg Leu Gln Ala
                          1               5                  10

gcc cct gcc gcc gcc gcc gcc gcc ggg ccg aag gtg ccg ccg agc agt      939
Ala Pro Ala Ala Ala Ala Ala Ala Gly Pro Lys Val Pro Pro Ser Ser
                15                  20                  25

ctc cag cgc agg ctt cct tac cgg gcg acc aca atg tcc gag ttt ctc      987
Leu Gln Arg Arg Leu Pro Tyr Arg Ala Thr Thr Met Ser Glu Phe Leu
            30                  35                  40

ctc gcc tta ctc act ctc tcg gga tta ttg ccg att gcc agg gtg ctg     1035
Leu Ala Leu Leu Thr Leu Ser Gly Leu Leu Pro Ile Ala Arg Val Leu
        45                  50                  55

acc gtg gga gcc gac cga gat cag cag ttg tgt gat cct ggt gaa ttt     1083
Thr Val Gly Ala Asp Arg Asp Gln Gln Leu Cys Asp Pro Gly Glu Phe
    60                  65                  70

ctt tgc cac gat cac gtg act tgt gtc tcc cgg agc tgg ctg tgt gat     1131
Leu Cys His Asp His Val Thr Cys Val Ser Arg Ser Trp Leu Cys Asp
75                  80                  85                  90

ggg gac cct gac tgc cct gat gat tca gac gag tct tta gat acc tgt     1179
Gly Asp Pro Asp Cys Pro Asp Asp Ser Asp Glu Ser Leu Asp Thr Cys
                95                  100                 105

ccc gag gag gta gaa atc aag tgc ccc ttg aat cac att gct tgc ctt     1227
Pro Glu Glu Val Glu Ile Lys Cys Pro Leu Asn His Ile Ala Cys Leu
            110                 115                 120
```

```
ggt acc aac aaa tgt gtt cat tta tcc cag ctg tgc aat ggt gtc ttg      1275
Gly Thr Asn Lys Cys Val His Leu Ser Gln Leu Cys Asn Gly Val Leu
        125                 130                 135

gac tgc cca gat ggg tat gac gaa gga gta cat tgt cag gaa ctg tta      1323
Asp Cys Pro Asp Gly Tyr Asp Glu Gly Val His Cys Gln Glu Leu Leu
    140                 145                 150

tcc aat tgc caa cag ctg aat tgt cag tat aaa tgt aca atg gtc aga      1371
Ser Asn Cys Gln Gln Leu Asn Cys Gln Tyr Lys Cys Thr Met Val Arg
155                 160                 165                 170

aat agt aca aga tgt tac tgt gag gat gga ttc gaa ata aca gaa gat      1419
Asn Ser Thr Arg Cys Tyr Cys Glu Asp Gly Phe Glu Ile Thr Glu Asp
                175                 180                 185

ggg aga agc tgt aaa gat caa gat gaa tgt gct gtt tat ggt aca tgc      1467
Gly Arg Ser Cys Lys Asp Gln Asp Glu Cys Ala Val Tyr Gly Thr Cys
                190                 195                 200

agc cag acc tgc aga aac aca cat gga tcc tac act tgc agt tgt gtg      1515
Ser Gln Thr Cys Arg Asn Thr His Gly Ser Tyr Thr Cys Ser Cys Val
        205                 210                 215

gaa ggc tac cta atg cag cca gac aac aga tct tgc aag gct aaa att      1563
Glu Gly Tyr Leu Met Gln Pro Asp Asn Arg Ser Cys Lys Ala Lys Ile
        220                 225                 230

gaa cct aca gat aga cca cct ata cta tta att gca aat ttt gaa aca      1611
Glu Pro Thr Asp Arg Pro Pro Ile Leu Leu Ile Ala Asn Phe Glu Thr
235                 240                 245                 250

att gag gtt ttc tat ctt aat gga agt aaa atg gca act cta agc tca      1659
Ile Glu Val Phe Tyr Leu Asn Gly Ser Lys Met Ala Thr Leu Ser Ser
                255                 260                 265

gtc aat gga aat gaa att cat act ctg gat ttt att tat aat gaa gat      1707
Val Asn Gly Asn Glu Ile His Thr Leu Asp Phe Ile Tyr Asn Glu Asp
                270                 275                 280

gtg att tgt tgg att gaa tca aga gaa tct tca aat caa ctc aaa tgt      1755
Val Ile Cys Trp Ile Glu Ser Arg Glu Ser Ser Asn Gln Leu Lys Cys
        285                 290                 295

atc cag ata aca aaa gca gga gga tta aca gat gaa tgg aca atc aat      1803
Ile Gln Ile Thr Lys Ala Gly Gly Leu Thr Asp Glu Trp Thr Ile Asn
300                 305                 310

att ctt caa tcc ttc cac aat gtg caa caa atg gcg att gac tgg ctc      1851
Ile Leu Gln Ser Phe His Asn Val Gln Gln Met Ala Ile Asp Trp Leu
315                 320                 325                 330

act cga aat ctc tat ttt gtg gac cat gtc ggt gac cgg atc ttt gtt      1899
Thr Arg Asn Leu Tyr Phe Val Asp His Val Gly Asp Arg Ile Phe Val
                335                 340                 345

tgt aat tcc aac ggt tct gta tgt gtc acc ctg att gat ctg gag ctt      1947
Cys Asn Ser Asn Gly Ser Val Cys Val Thr Leu Ile Asp Leu Glu Leu
                350                 355                 360

cac aat cct aaa gca ata gca gta gat cca ata gca gga aaa ctt ttc      1995
His Asn Pro Lys Ala Ile Ala Val Asp Pro Ile Ala Gly Lys Leu Phe
        365                 370                 375
```

```
ttt act gac tac ggg aat gtc gcc aaa gtg gag aga tgt gac atg gat      2043
Phe Thr Asp Tyr Gly Asn Val Ala Lys Val Glu Arg Cys Asp Met Asp
    380             385             390

ggg atg aac cga aca agg ata att gat tca aag aca gag cag cca gct      2091
Gly Met Asn Arg Thr Arg Ile Ile Asp Ser Lys Thr Glu Gln Pro Ala
395             400             405             410

gca ctg gca cta gac cta gtc aac aaa ttg gtt tac tgg gta gat ctt      2139
Ala Leu Ala Leu Asp Leu Val Asn Lys Leu Val Tyr Trp Val Asp Leu
            415             420             425

tac ttg gac tat gtg gga gta gtg gac tat caa gga aaa aat aga cac      2187
Tyr Leu Asp Tyr Val Gly Val Val Asp Tyr Gln Gly Lys Asn Arg His
        430             435             440

act gtc att caa ggc aga caa gtc aga cat ctt tat ggt ata act gtg      2235
Thr Val Ile Gln Gly Arg Gln Val Arg His Leu Tyr Gly Ile Thr Val
        445             450             455

ttt gaa gat tat ttg tat gca acc aat tct gat aac tac aat atc gta      2283
Phe Glu Asp Tyr Leu Tyr Ala Thr Asn Ser Asp Asn Tyr Asn Ile Val
    460             465             470

agg ata aac cga ttt aat ggg act gat att cac tca tta att aaa att      2331
Arg Ile Asn Arg Phe Asn Gly Thr Asp Ile His Ser Leu Ile Lys Ile
475             480             485             490

gag aat gct tgg gga atc cga att tat caa aaa aga act caa cca aca      2379
Glu Asn Ala Trp Gly Ile Arg Ile Tyr Gln Lys Arg Thr Gln Pro Thr
            495             500             505

gtc aga agc cat gca tgt gaa gtc gat cca tat gga atg cca ggg ggc      2427
Val Arg Ser His Ala Cys Glu Val Asp Pro Tyr Gly Met Pro Gly Gly
        510             515             520

tgt tca cac atc tgt cta ctc agc agc agt tac aaa act cgg act tgt      2475
Cys Ser His Ile Cys Leu Leu Ser Ser Ser Tyr Lys Thr Arg Thr Cys
        525             530             535

cgc tgc agg act ggc ttc aac ttg gga agt gat ggc agg tca tgc aaa      2523
Arg Cys Arg Thr Gly Phe Asn Leu Gly Ser Asp Gly Arg Ser Cys Lys
540             545             550

aga cca aag aat gag ttg ttc ctc ttt tat ggg aaa gga cgc cca gga      2571
Arg Pro Lys Asn Glu Leu Phe Leu Phe Tyr Gly Lys Gly Arg Pro Gly
555             560             565             570

att gtt aga gga atg gac ttg aat acc aag ata gct gat gaa tac atg      2619
Ile Val Arg Gly Met Asp Leu Asn Thr Lys Ile Ala Asp Glu Tyr Met
            575             580             585

atc ccc ata gaa aat ctg gta aac cct cgt gct tta gac ttt cac gca      2667
Ile Pro Ile Glu Asn Leu Val Asn Pro Arg Ala Leu Asp Phe His Ala
            590             595             600

gaa acc aat tac atc tac ttt gct gac acc acc agt ttc cta att ggc      2715
Glu Thr Asn Tyr Ile Tyr Phe Ala Asp Thr Thr Ser Phe Leu Ile Gly
            605             610             615

cgg cag aag ata gat ggc aca gag aga gaa acc atc ctg aaa gat gat      2763
Arg Gln Lys Ile Asp Gly Thr Glu Arg Glu Thr Ile Leu Lys Asp Asp
620             625             630
```

```
ctg gat aat gta gag ggc att gct gtg gac tgg att gga aat aat ctt    2811
Leu Asp Asn Val Glu Gly Ile Ala Val Asp Trp Ile Gly Asn Asn Leu
635             640             645             650

tac tgg acc aat gat ggc cat agg aaa acc att aat gtg gct agg ctg    2859
Tyr Trp Thr Asn Asp Gly His Arg Lys Thr Ile Asn Val Ala Arg Leu
                655             660             665

gaa aaa gct tct cag agt cgg aag act ctt tta gag ggt gaa atg tct    2907
Glu Lys Ala Ser Gln Ser Arg Lys Thr Leu Leu Glu Gly Glu Met Ser
            670             675             680

cat ccc aga gga att gtg gtg gat cca att aat ggt tgg atg tat tgg    2955
His Pro Arg Gly Ile Val Val Asp Pro Ile Asn Gly Trp Met Tyr Trp
            685             690             695

aca gac tgg gag gaa gat gaa ata gat gac agc gtg gga agg att gag    3003
Thr Asp Trp Glu Glu Asp Glu Ile Asp Asp Ser Val Gly Arg Ile Glu
700             705             710

aag gcc tgg atg gat gga ttc aat cgg cag att ttt gtg act tca aag    3051
Lys Ala Trp Met Asp Gly Phe Asn Arg Gln Ile Phe Val Thr Ser Lys
715             720             725             730

atg ctg tgg cca aac ggt tta act ctg gac ttt cac acc aac aca tta    3099
Met Leu Trp Pro Asn Gly Leu Thr Leu Asp Phe His Thr Asn Thr Leu
                735             740             745

tac tgg tgt gat gcc tat tac gat cat att gaa aaa gta ttt ttg aat    3147
Tyr Trp Cys Asp Ala Tyr Tyr Asp His Ile Glu Lys Val Phe Leu Asn
            750             755             760

ggg act cac agg aag att gtt tac agt ggg aga gag ttg aac cac cct    3195
Gly Thr His Arg Lys Ile Val Tyr Ser Gly Arg Glu Leu Asn His Pro
            765             770             775

ttc gga ctg tcg cat cat gga aat tat gtg ttc tgg act gat tat atg    3243
Phe Gly Leu Ser His His Gly Asn Tyr Val Phe Trp Thr Asp Tyr Met
            780             785             790

aat ggt tcc att ttt caa cta gat ttg ata aca agt gag gtg aca ttg    3291
Asn Gly Ser Ile Phe Gln Leu Asp Leu Ile Thr Ser Glu Val Thr Leu
795             800             805             810

ctg agg cat gaa aga cca ccc cta ttt ggg ctt cag att tat gat cca    3339
Leu Arg His Glu Arg Pro Pro Leu Phe Gly Leu Gln Ile Tyr Asp Pro
            815             820             825

cga aag caa caa ggt gac aat atg tgc cga gta aat aat ggg ggc tgt    3387
Arg Lys Gln Gln Gly Asp Asn Met Cys Arg Val Asn Asn Gly Gly Cys
            830             835             840

agt aca ctt tgc ttg gct atc cca gga ggc cgg gtg tgt gct tgt gcc    3435
Ser Thr Leu Cys Leu Ala Ile Pro Gly Gly Arg Val Cys Ala Cys Ala
            845             850             855

gat aat caa ctt ttg gat gaa aat ggg aca act tgc aca ttt aat cct    3483
Asp Asn Gln Leu Leu Asp Glu Asn Gly Thr Thr Cys Thr Phe Asn Pro
    860             865             870

gga gaa gca cta cct cac ata tgt aaa gct gga gag ttt cgc tgc aaa    3531
Gly Glu Ala Leu Pro His Ile Cys Lys Ala Gly Glu Phe Arg Cys Lys
875             880             885             890
```

```
aac aga cac tgt atc caa gct cgg tgg aaa tgt gat ggc gac gat gac      3579
Asn Arg His Cys Ile Gln Ala Arg Trp Lys Cys Asp Gly Asp Asp Asp
            895                 900                 905

tgc cta gac gga agc gat gag gat tca gta aac tgc ttc aat cat agc      3627
Cys Leu Asp Gly Ser Asp Glu Asp Ser Val Asn Cys Phe Asn His Ser
        910                 915                 920

tgt cct gat gat cag ttt aaa tgc cag aat aat cgc tgc atc ccc aag      3675
Cys Pro Asp Asp Gln Phe Lys Cys Gln Asn Asn Arg Cys Ile Pro Lys
        925                 930                 935

aga tgg ctt tgt gat gga gct aat gac tgt ggg agc aat gaa gat gaa      3723
Arg Trp Leu Cys Asp Gly Ala Asn Asp Cys Gly Ser Asn Glu Asp Glu
        940                 945                 950

tcc aat caa act tgc aca gcc aga aca tgc cag gta gac cag ttt tct      3771
Ser Asn Gln Thr Cys Thr Ala Arg Thr Cys Gln Val Asp Gln Phe Ser
955                 960                 965                 970

tgc gga aat ggg cgt tgc att ccc aga gca tgg ctg tgt gac agg gaa      3819
Cys Gly Asn Gly Arg Cys Ile Pro Arg Ala Trp Leu Cys Asp Arg Glu
            975                 980                 985

gac gac tgt ggt gac cag aca gat gaa atg gca tct tgt gaa ttc cca      3867
Asp Asp Cys Gly Asp Gln Thr Asp Glu Met Ala Ser Cys Glu Phe Pro
            990                 995                 1000

act tgt gag cca cta acc caa ttc gta tgc aaa agt gga aga tgc          3912
Thr Cys Glu Pro Leu Thr Gln Phe Val Cys Lys Ser Gly Arg Cys
        1005                1010                1015

att agc agc aaa tgg cac tgc gac tct gat gac gac tgt ggg gac          3957
Ile Ser Ser Lys Trp His Cys Asp Ser Asp Asp Asp Cys Gly Asp
        1020                1025                1030

ggg agt gat gag gtg ggc tgt gtt cac tct tgc ttt gat aat cag          4002
Gly Ser Asp Glu Val Gly Cys Val His Ser Cys Phe Asp Asn Gln
        1035                1040                1045

ttc aga tgt tcc agt ggc aga tgc atc cca ggc cac tgg gcc tgt          4047
Phe Arg Cys Ser Ser Gly Arg Cys Ile Pro Gly His Trp Ala Cys
        1050                1055                1060

gat ggt gac aat gac tgt ggg gac ttc agt gat gaa gcc cag atc          4092
Asp Gly Asp Asn Asp Cys Gly Asp Phe Ser Asp Glu Ala Gln Ile
        1065                1070                1075

aat tgt act aaa gaa gag att cat tct cct gct ggt tgc aac gga          4137
Asn Cys Thr Lys Glu Glu Ile His Ser Pro Ala Gly Cys Asn Gly
        1080                1085                1090

aat gaa ttt cag tgc cac cct gat ggt aat tgc gtt cct gat ttg          4182
Asn Glu Phe Gln Cys His Pro Asp Gly Asn Cys Val Pro Asp Leu
        1095                1100                1105

tgg cgc tgt gat gga gaa aaa gac tgt gaa gat ggt agt gat gaa          4227
Trp Arg Cys Asp Gly Glu Lys Asp Cys Glu Asp Gly Ser Asp Glu
        1110                1115                1120

aaa ggt tgc aat ggt acc ata cga ttg tgt gac cac aaa acc aag          4272
Lys Gly Cys Asn Gly Thr Ile Arg Leu Cys Asp His Lys Thr Lys
        1125                1130                1135
```

```
ttt tcc tgt  tgg agt aca ggg aga  tgc atc aac aaa gca  tgg gtg    4317
Phe Ser Cys  Trp Ser Thr Gly Arg  Cys Ile Asn Lys Ala  Trp Val
        1140             1145                 1150

tgt gat gga  gat att gat tgc gaa  gat cag tca gat gaa  gat gac    4362
Cys Asp Gly  Asp Ile Asp Cys Glu  Asp Gln Ser Asp Glu  Asp Asp
        1155             1160                 1165

tgt gac agt  ttc ttg tgt gga cca  ccc aag cat cct tgt  gct aat    4407
Cys Asp Ser  Phe Leu Cys Gly Pro  Pro Lys His Pro Cys  Ala Asn
        1170             1175                 1180

gac acc tca  gcc tgc ctg cag cca  gag aaa ctc tgc aat  ggg aaa    4452
Asp Thr Ser  Val Cys Leu Gln Pro  Glu Lys Leu Cys Asn  Gly Lys
        1185             1190                 1195

aag gat tgt  cct gat ggc tct gat  gaa ggc tat ctc tgt  gat gag    4497
Lys Asp Cys  Pro Asp Gly Ser Asp  Glu Gly Tyr Leu Cys  Asp Glu
        1200             1205                 1210

tgt tcg ctg  aac aat gga ggc tgt  agc aac cac tgt tct  gtt gtt    4542
Cys Ser Leu  Asn Asn Gly Gly Cys  Ser Asn His Cys Ser  Val Val
        1215             1220                 1225

cct gga aga  gga att gtc tgt tcc  tgc cct gaa gga ctt  caa ctc    4587
Pro Gly Arg  Gly Ile Val Cys Ser  Cys Pro Glu Gly Leu  Gln Leu
        1230             1235                 1240

aac aaa gac  aat aaa aca tgt gaa  att gtg gat tat tgt  agc aat    4632
Asn Lys Asp  Asn Lys Thr Cys Glu  Ile Val Asp Tyr Cys  Ser Asn
        1245             1250                 1255

cat cta aag  tgc agc caa gta tgt  gag cag cac aag cac  aca gtc    4677
His Leu Lys  Cys Ser Gln Val Cys  Glu Gln His Lys His  Thr Val
        1260             1265                 1270

aag tgc tca  tgt tat gaa ggt tgg  aag ctg gat gta gac  ggt gaa    4722
Lys Cys Ser  Cys Tyr Glu Gly Trp  Lys Leu Asp Val Asp  Gly Glu
        1275             1280                 1285

agt tgt aca  agt gtt gat cct ttt  gaa gca ttc atc atc  ttt tct    4767
Ser Cys Thr  Ser Val Asp Pro Phe  Glu Ala Phe Ile Ile  Phe Ser
        1290             1295                 1300

att cgt cat  gag atc aga agg att  gat ctt cac aaa aga  gac tat    4812
Ile Arg His  Glu Ile Arg Arg Ile  Asp Leu His Lys Arg  Asp Tyr
        1305             1310                 1315

agt cta ctt  gtt cct gga ttg aga  aac aca ata gca ctt  gat ttt    4857
Ser Leu Leu  Val Pro Gly Leu Arg  Asn Thr Ile Ala Leu  Asp Phe
        1320             1325                 1330

cac ttc aat  caa agt tta ctt tat  tgg aca gat gtt gta  gaa gac    4902
His Phe Asn  Gln Ser Leu Leu Tyr  Trp Thr Asp Val Val  Glu Asp
        1335             1340                 1345

aga ata tac  cgg gga aag ctt tct  gaa agt gga ggt gtc  agt gcc    4947
Arg Ile Tyr  Arg Gly Lys Leu Ser  Glu Ser Gly Gly Val  Ser Ala
        1350             1355                 1360

att gaa gtg  gtt gtg gag cat ggc  ctg gct act cca gaa  ggc ctg    4992
Ile Glu Val  Val Val Glu His Gly  Leu Ala Thr Pro Glu  Gly Leu
        1365             1370                 1375
```

```
aca gtc gac  tgg ata gca gga aac  ata tac tgg ata gac  agc aat      5037
Thr Val Asp  Trp Ile Ala Gly Asn  Ile Tyr Trp Ile Asp  Ser Asn
         1380              1385              1390

ctg gac caa  atc gaa gtg gcc aaa  cta gat ggc tcc cta  aga act      5082
Leu Asp Gln  Ile Glu Val Ala Lys  Leu Asp Gly Ser Leu  Arg Thr
         1395              1400              1405

aca cta ata  gca gga gcc atg gaa  cac ccc agg gcc att  gct ttg      5127
Thr Leu Ile  Ala Gly Ala Met Glu  His Pro Arg Ala Ile  Ala Leu
         1410              1415              1420

gac cca aga  tat gga att ctt ttc  tgg aca gac tgg gat  gca aat      5172
Asp Pro Arg  Tyr Gly Ile Leu Phe  Trp Thr Asp Trp Asp  Ala Asn
         1425              1430              1435

ttt cct cgc  att gaa tct gcc tct  atg agt ggt gct ggg  aga aaa      5217
Phe Pro Arg  Ile Glu Ser Ala Ser  Met Ser Gly Ala Gly  Arg Lys
         1440              1445              1450

acc atc tat  aaa gac atg aaa act  ggg gct tgg cct aat  gga cta      5262
Thr Ile Tyr  Lys Asp Met Lys Thr  Gly Ala Trp Pro Asn  Gly Leu
         1455              1460              1465

act gtg gac  cac ttt gag aaa agg  ata gtg tgg aca gac  gcc agg      5307
Thr Val Asp  His Phe Glu Lys Arg  Ile Val Trp Thr Asp  Ala Arg
         1470              1475              1480

tca gat gct  att tat tca gcc ctc  tat gat gga aca aac  atg ata      5352
Ser Asp Ala  Ile Tyr Ser Ala Leu  Tyr Asp Gly Thr Asn  Met Ile
         1485              1490              1495

gaa atc atc  cga ggt cat gaa tac  ctt tcc cat ccc ttt  gct gtg      5397
Glu Ile Ile  Arg Gly His Glu Tyr  Leu Ser His Pro Phe  Ala Val
         1500              1505              1510

tct cta tat  ggg agt gaa gtc tac  tgg aca gac tgg agg  acc aac      5442
Ser Leu Tyr  Gly Ser Glu Val Tyr  Trp Thr Asp Trp Arg  Thr Asn
         1515              1520              1525

aca ttg tcc  aaa gcc aat aag tgg  aca ggg cag aat gtc  agt gtg      5487
Thr Leu Ser  Lys Ala Asn Lys Trp  Thr Gly Gln Asn Val  Ser Val
         1530              1535              1540

att cag aaa  acc agt gca cag cca  ttt gac ctt cag ata  tac cat      5532
Ile Gln Lys  Thr Ser Ala Gln Pro  Phe Asp Leu Gln Ile  Tyr His
         1545              1550              1555

ccc agt cgc  cag cca cag gct ccc  aat cct tgt gca gct  aat gat      5577
Pro Ser Arg  Gln Pro Gln Ala Pro  Asn Pro Cys Ala Ala  Asn Asp
         1560              1565              1570

ggc aaa ggc  ccc tgc tct cac atg  tgt cta atc aat cac  aat agg      5622
Gly Lys Gly  Pro Cys Ser His Met  Cys Leu Ile Asn His  Asn Arg
         1575              1580              1585

agt gct gcc  tgt gcg tgc ccc cac  ttg atg aag ctt tct  tca gac      5667
Ser Ala Ala  Cys Ala Cys Pro His  Leu Met Lys Leu Ser  Ser Asp
         1590              1595              1600

aag aag acc  tgc tat gaa atg aaa  aaa ttt ctt ctt tat  gca aga      5712
Lys Lys Thr  Cys Tyr Glu Met Lys  Lys Phe Leu Leu Tyr  Ala Arg
         1605              1610              1615
```

```
cgt tct gaa  atc aga gga gtg gat  att gac aat cca tac  ttt aac      5757
Arg Ser Glu  Ile Arg Gly Val Asp  Ile Asp Asn Pro Tyr  Phe Asn
         1620              1625                  1630

ttc atc acg  gca ttt aca gtc cct  gat att gat gac gtt  act gtg      5802
Phe Ile Thr  Ala Phe Thr Val Pro  Asp Ile Asp Asp Val  Thr Val
         1635              1640                  1645

ata gac ttc  gat gca tct gag gaa  cgt tta tac tgg aca  gat att      5847
Ile Asp Phe  Asp Ala Ser Glu Glu  Arg Leu Tyr Trp Thr  Asp Ile
         1650              1655                  1660

aaa aca caa  acc att aaa cga gct  ttt att aac gga act  ggg tta      5892
Lys Thr Gln  Thr Ile Lys Arg Ala  Phe Ile Asn Gly Thr  Gly Leu
         1665              1670                  1675

gaa act gtt  att tca aga gat att  cag agt atc aga ggg  cta gca      5937
Glu Thr Val  Ile Ser Arg Asp Ile  Gln Ser Ile Arg Gly  Leu Ala
         1680              1685                  1690

gtg gat tgg  gtg tca cgt aat tta  tac tgg att agc tca  gaa ttt      5982
Val Asp Trp  Val Ser Arg Asn Leu  Tyr Trp Ile Ser Ser  Glu Phe
         1695              1700                  1705

gat gaa acg  caa att aat gtg gca  agg cta gat ggc tct  ttg aaa      6027
Asp Glu Thr  Gln Ile Asn Val Ala  Arg Leu Asp Gly Ser  Leu Lys
         1710              1715                  1720

acc tca att  atc cat gga atc gat  aag cca cag tgt ctt  gca gct      6072
Thr Ser Ile  Ile His Gly Ile Asp  Lys Pro Gln Cys Leu  Ala Ala
         1725              1730                  1735

cac cca gtc  agg gga aaa ctc tac  tgg acc gat gga aac  aca att      6117
His Pro Val  Arg Gly Lys Leu Tyr  Trp Thr Asp Gly Asn  Thr Ile
         1740              1745                  1750

aac atg gca  aat atg gat ggc agt  aat agc aag att ctg  ttt cag      6162
Asn Met Ala  Asn Met Asp Gly Ser  Asn Ser Lys Ile Leu  Phe Gln
         1755              1760                  1765

aat cag aag  gag cca gtt ggt cta  tcg ata gac tat gtg  gaa aac      6207
Asn Gln Lys  Glu Pro Val Gly Leu  Ser Ile Asp Tyr Val  Glu Asn
         1770              1775                  1780

aag ctt tat  tgg atc agt tcg ggg  aat gga acc ata aat  aga tgc      6252
Lys Leu Tyr  Trp Ile Ser Ser Gly  Asn Gly Thr Ile Asn  Arg Cys
         1785              1790                  1795

aac ctg gat  ggt ggt aat tca gaa  gta atc gag tca atg  aaa gaa      6297
Asn Leu Asp  Gly Gly Asn Leu Glu  Val Ile Glu Ser Met  Lys Glu
         1800              1805                  1810

gaa tta aca  aaa gct aca gcc cta  acc atc atg gat aag  aaa ctg      6342
Glu Leu Thr  Lys Ala Thr Ala Leu  Thr Ile Met Asp Lys  Lys Leu
         1815              1820                  1825

tgg tgg gca  gac caa aac tta gcc  cag cta gga acc tgc  agc aaa      6387
Trp Trp Ala  Asp Gln Asn Leu Ala  Gln Leu Gly Thr Cys  Ser Lys
         1830              1835                  1840

aga gac gga  aga aac ccc acc atc  cta cgg aat aag act  tct ggg      6432
Arg Asp Gly  Arg Asn Pro Thr Ile  Leu Arg Asn Lys Thr  Ser Gly
         1845              1850                  1855
```

```
gta gtt cat  atg aaa gtc tat gat  aaa gaa gca cag caa  ggc agc   6477
Val Val His  Met Lys Val Tyr Asp  Lys Glu Ala Gln Gln  Gly Ser
        1860             1865              1870

aat tcc tgc  caa cta aac aat ggt  gga tgc tct caa ctt  tgt tta   6522
Asn Ser Cys  Gln Leu Asn Asn Gly  Gly Cys Ser Gln Leu  Cys Leu
        1875             1880              1885

cca aca tct  gaa act aca agg act  tgt atg tgt aca gtg  gga tat   6567
Pro Thr Ser  Glu Thr Thr Arg Thr  Cys Met Cys Thr Val  Gly Tyr
        1890             1895              1900

tat ctc caa  aag aac cgt atg tca  tgt caa ggt ata gaa  tca ttt   6612
Tyr Leu Gln  Lys Asn Arg Met Ser  Cys Gln Gly Ile Glu  Ser Phe
        1905             1910              1915

ctt atg tac  tct gtt cat gaa gga  atc agg gga ata cct  ctt gaa   6657
Leu Met Tyr  Ser Val His Glu Gly  Ile Arg Gly Ile Pro  Leu Glu
        1920             1925              1930

cca agt gac  aaa atg gat gct ttg  atg cct ata tca gga  act tca   6702
Pro Ser Asp  Lys Met Asp Ala Leu  Met Pro Ile Ser Gly  Thr Ser
        1935             1940              1945

ttt gcc gtg  gga ata gat ttc cat  gca gaa aat gat acc  atc tac   6747
Phe Ala Val  Gly Ile Asp Phe His  Ala Glu Asn Asp Thr  Ile Tyr
        1950             1955              1960

tgg aca gac  atg ggc ttc aat aaa  att agc aga gct aaa  aga gat   6792
Trp Thr Asp  Met Gly Phe Asn Lys  Ile Ser Arg Ala Lys  Arg Asp
        1965             1970              1975

cag act tgg  aaa gaa gat atc att  acc aat ggc ttg gga  aga gtg   6837
Gln Thr Trp  Lys Glu Asp Ile Ile  Thr Asn Gly Leu Gly  Arg Val
        1980             1985              1990

gaa ggg ata  gct gtt gac tgg att  gct ggt aac ata tat  tgg aca   6882
Glu Gly Ile  Ala Val Asp Trp Ile  Ala Gly Asn Ile Tyr  Trp Thr
        1995             2000              2005

gat cat ggt  ttc aac tta att gaa  gtt gca aga ctc aat  ggt tct   6927
Asp His Gly  Phe Asn Leu Ile Glu  Val Ala Arg Leu Asn  Gly Ser
        2010             2015              2020

ttc cgt tat  gta att att tcc caa  ggc ctg gat caa cca  aga tct   6972
Phe Arg Tyr  Val Ile Ile Ser Gln  Gly Leu Asp Gln Pro  Arg Ser
        2025             2030              2035

ata gct gtg  cac cca gag aaa ggc  ctc ttg ttc tgg act  gaa tgg   7017
Ile Ala Val  His Pro Glu Lys Gly  Leu Leu Phe Trp Thr  Glu Trp
        2040             2045              2050

gga caa atg  ccc tgt att gga aag  gct cgc ttg gat ggc  tca gag   7062
Gly Gln Met  Pro Cys Ile Gly Lys  Ala Arg Leu Asp Gly  Ser Glu
        2055             2060              2065

aag gtt gtc  ctt gta agc atg ggt  ata gca tgg ccg aat  ggc atc   7107
Lys Val Val  Leu Val Ser Met Gly  Ile Ala Trp Pro Asn  Gly Ile
        2070             2075              2080

tcc atc gac  tat gag gaa aat aaa  ttg tac tgg tgt gat  gct cgc   7152
Ser Ile Asp  Tyr Glu Glu Asn Lys  Leu Tyr Trp Cys Asp  Ala Arg
        2085             2090              2095
```

```
aca gac aag   ata gag aga atc gac   ctt gag act gga ggg   aat cgc      7197
Thr Asp Lys   Ile Glu Arg Ile Asp   Leu Glu Thr Gly Gly   Asn Arg
              2100                  2105                  2110

gag atg gtg   ctg tca gga agc aat   gtg gat atg ttt tca   gtc gca      7242
Glu Met Val   Leu Ser Gly Ser Asn   Val Asp Met Phe Ser   Val Ala
              2115                  2120                  2125

gtc ttt ggg   gct tac atc tac tgg   tct gac aga gca cat   gca aac      7287
Val Phe Gly   Ala Tyr Ile Tyr Trp   Ser Asp Arg Ala His   Ala Asn
              2130                  2135                  2140

ggg tct gtc   aga agg ggc cac aag   aat gat gcc aca gaa   acg ata      7332
Gly Ser Val   Arg Arg Gly His Lys   Asn Asp Ala Thr Glu   Thr Ile
              2145                  2150                  2155

acc atg aga   acc ggc ctt gga gtc   aac ctg aag gag gtt   aaa ata      7377
Thr Met Arg   Thr Gly Leu Gly Val   Asn Leu Lys Glu Val   Lys Ile
              2160                  2165                  2170

ttt aac cga   gta aga gag aaa ggg   acc aat gtt tgt gcc   agg gac      7422
Phe Asn Arg   Val Arg Glu Lys Gly   Thr Asn Val Cys Ala   Arg Asp
              2175                  2180                  2185

aat ggt ggc   tgt aag caa ctc tgt   ctt tat cga gga aat   tcc cgg      7467
Asn Gly Gly   Cys Lys Gln Leu Cys   Leu Tyr Arg Gly Asn   Ser Arg
              2190                  2195                  2200

aga act tgt   gct tgt gcc cat gga   tat ttg gca gaa gat   gga gtt      7512
Arg Thr Cys   Ala Cys Ala His Gly   Tyr Leu Ala Glu Asp   Gly Val
              2205                  2210                  2215

act tgc ctg   agg cat gaa ggc tat   tta ctg tat tca gga   aga aca      7557
Thr Cys Leu   Arg His Glu Gly Tyr   Leu Leu Tyr Ser Gly   Arg Thr
              2220                  2225                  2230

ata tta aaa   agt ata cat ctt tct   gat gaa acc aat tta   aat tcc      7602
Ile Leu Lys   Ser Ile His Leu Ser   Asp Glu Thr Asn Leu   Asn Ser
              2235                  2240                  2245

cca ata agg   cca tat gag aat cca   cgt tat ttc aag aat   gtc ata      7647
Pro Ile Arg   Pro Tyr Glu Asn Pro   Arg Tyr Phe Lys Asn   Val Ile
              2250                  2255                  2260

gcc ttg gct   ttt gac tat aat caa   aga aga aaa ggt acc   aac cga      7692
Ala Leu Ala   Phe Asp Tyr Asn Gln   Arg Arg Lys Gly Thr   Asn Arg
              2265                  2270                  2275

atc ttt tac   agt gat gca cac ttt   gga aat ata cag ctt   att aaa      7737
Ile Phe Tyr   Ser Asp Ala His Phe   Gly Asn Ile Gln Leu   Ile Lys
              2280                  2285                  2290

gac aac tgg   gaa gac aga caa gta   att gtt gaa aat gtg   ggt tct      7782
Asp Asn Trp   Glu Asp Arg Gln Val   Ile Val Glu Asn Val   Gly Ser
              2295                  2300                  2305

gtg gaa gga   ctt gcc tat cac aga   gcc tgg gat aca ctg   tac tgg      7827
Val Glu Gly   Leu Ala Tyr His Arg   Ala Trp Asp Thr Leu   Tyr Trp
              2310                  2315                  2320

aca agc tct   acc acc tca tcc atc   acc aga cac act gtg   gac cag      7872
Thr Ser Ser   Thr Thr Ser Ser Ile   Thr Arg His Thr Val   Asp Gln
              2325                  2330                  2335
```

```
act cgg cct  gga gca ttt gac agg  gaa gct gtc atc acc  atg tca      7917
Thr Arg Pro  Gly Ala Phe Asp Arg  Glu Ala Val Ile Thr  Met Ser
        2340              2345                  2350

gaa gat gac  cat cca cat gtg cta  gcc ttg gat gaa tgt  caa aat      7962
Glu Asp Asp  His Pro His Val Leu  Ala Leu Asp Glu Cys  Gln Asn
        2355              2360                  2365

tta atg ttt  tgg acc aac tgg aat  gaa caa cat cca agt  atc atg      8007
Leu Met Phe  Trp Thr Asn Trp Asn  Glu Gln His Pro Ser  Ile Met
        2370              2375                  2380

aga tct act  ctg act ggg aaa aat  gct caa gtg gtg gtc  agt aca      8052
Arg Ser Thr  Leu Thr Gly Lys Asn  Ala Gln Val Val Val  Ser Thr
        2385              2390                  2395

gac ata ctc  act cca aat gga ctt  act atc gac tac cgt  gca gag      8097
Asp Ile Leu  Thr Pro Asn Gly Leu  Thr Ile Asp Tyr Arg  Ala Glu
        2400              2405                  2410

aag ctg tat  ttc tca gat ggc agt  cta gga aaa att gaa  agg tgt      8142
Lys Leu Tyr  Phe Ser Asp Gly Ser  Leu Gly Lys Ile Glu  Arg Cys
        2415              2420                  2425

gaa tac gat  gga tcc cag aga cat  gtg ata gtt aaa tct  ggg cca      8187
Glu Tyr Asp  Gly Ser Gln Arg His  Val Ile Val Lys Ser  Gly Pro
        2430              2435                  2440

ggg act ttc  ctc agt ttg gct gtt  tat gac aat tat ata  ttc tgg      8232
Gly Thr Phe  Leu Ser Leu Ala Val  Tyr Asp Asn Tyr Ile  Phe Trp
        2445              2450                  2455

tcg gac tgg  gga aga aga gct ata  ctg cgg tcc aac aag  tac aca      8277
Ser Asp Trp  Gly Arg Arg Ala Ile  Leu Arg Ser Asn Lys  Tyr Thr
        2460              2465                  2470

gga gga gat  aca aaa att ctt cgt  tcc gat att cca cat  cag cca      8322
Gly Gly Asp  Thr Lys Ile Leu Arg  Ser Asp Ile Pro His  Gln Pro
        2475              2480                  2485

atg gga atc  ata gct gtt gcc aat  gac acc aat agc tgt  gaa ctt      8367
Met Gly Ile  Ile Ala Val Ala Asn  Asp Thr Asn Ser Cys  Glu Leu
        2490              2495                  2500

tct cca tgt  gca tta ttg aat gga  ggc tgc cat gac ttg  tgc ctt      8412
Ser Pro Cys  Ala Leu Leu Asn Gly  Gly Cys His Asp Leu  Cys Leu
        2505              2510                  2515

tta act ccc  aat ggg aga gtg aat  tgt tcc tgc aga ggg  gac cga      8457
Leu Thr Pro  Asn Gly Arg Val Asn  Cys Ser Cys Arg Gly  Asp Arg
        2520              2525                  2530

ata ttg cta  gag gac aac aga tgt  gtg act aaa aat tcc  tcc tgc      8502
Ile Leu Leu  Glu Asp Asn Arg Cys  Val Thr Lys Asn Ser  Ser Cys
        2535              2540                  2545

aac gct tat  tcg gag ttt gaa tgt  gga aat ggt gag tgc  att gac      8547
Asn Ala Tyr  Ser Glu Phe Glu Cys  Gly Asn Gly Glu Cys  Ile Asp
        2550              2555                  2560

tac cag ctc  acc tgt gat ggc att  cct cac tgt aaa gat  aaa tca      8592
Tyr Gln Leu  Thr Cys Asp Gly Ile  Pro His Cys Lys Asp  Lys Ser
        2565              2570                  2575
```

```
gat gaa aaa  ctg ctc tac tgt gaa  aac aga agc tgt cga  aga ggc   8637
Asp Glu Lys  Leu Leu Tyr Cys Glu  Asn Arg Ser Cys Arg  Arg Gly
        2580                  2585                  2590

ttc aag cca  tgc tat aat cgc cgc  tgc att cct cat ggc  aag tta   8682
Phe Lys Pro  Cys Tyr Asn Arg Arg  Cys Ile Pro His Gly  Lys Leu
        2595                  2600                  2605

tgt gat gga  gaa aat gac tgc gga  gac aac tct gat gaa  tta gat   8727
Cys Asp Gly  Glu Asn Asp Cys Gly  Asp Asn Ser Asp Glu  Leu Asp
        2610                  2615                  2620

tgt aaa gtt  tca acc tgt gcc acg  gtt gag ttc cgc tgt  gca gat   8772
Cys Lys Val  Ser Thr Cys Ala Thr  Val Glu Phe Arg Cys  Ala Asp
        2625                  2630                  2635

ggg act tgt  att cca aga tca gca  cga tgc aac cag aac  ata gat   8817
Gly Thr Cys  Ile Pro Arg Ser Ala  Arg Cys Asn Gln Asn  Ile Asp
        2640                  2645                  2650

tgt gca gat  gct tca gat gaa aag  aac tgc aat aac aca  gac tgc   8862
Cys Ala Asp  Ala Ser Asp Glu Lys  Asn Cys Asn Asn Thr  Asp Cys
        2655                  2660                  2665

aca cat ttc  tat aag ctt gga gtg  aaa acc aca ggg ttc  ata aga   8907
Thr His Phe  Tyr Lys Leu Gly Val  Lys Thr Thr Gly Phe  Ile Arg
        2670                  2675                  2680

tgt aat tct  acc tca ctg tgt gtt  ctg cca acc tgg ata  tgc gac   8952
Cys Asn Ser  Thr Ser Leu Cys Val  Leu Pro Thr Trp Ile  Cys Asp
        2685                  2690                  2695

ggg tct aat  gac tgt gga gac tat  tca gat gaa tta aag  tgc cca   8997
Gly Ser Asn  Asp Cys Gly Asp Tyr  Ser Asp Glu Leu Lys  Cys Pro
        2700                  2705                  2710

gtt cag aac  aaa cac aaa tgt gaa  gaa aat tat ttt agt  tgt cct   9042
Val Gln Asn  Lys His Lys Cys Glu  Glu Asn Tyr Phe Ser  Cys Pro
        2715                  2720                  2725

agt gga aga  tgc att ttg aat act  tgg ata tgc gat ggt  cag aaa   9087
Ser Gly Arg  Cys Ile Leu Asn Thr  Trp Ile Cys Asp Gly  Gln Lys
        2730                  2735                  2740

gat tgt gag  gat gga cgt gat gaa  ttc cac tgt gat tct  tct tgc   9132
Asp Cys Glu  Asp Gly Arg Asp Glu  Phe His Cys Asp Ser  Ser Cys
        2745                  2750                  2755

tct tgg aac  caa ttt gct tgt tcc  gca caa aaa tgt att  tct aag   9177
Ser Trp Asn  Gln Phe Ala Cys Ser  Ala Gln Lys Cys Ile  Ser Lys
        2760                  2765                  2770

cat tgg att  tgt gat gga gaa gat  gac tgt ggg gat ggg  tta gat   9222
His Trp Ile  Cys Asp Gly Glu Asp  Asp Cys Gly Asp Gly  Leu Asp
        2775                  2780                  2785

gaa agt gac  agc att tgt ggt gcc  ata acc tgt gct gct  gac atg   9267
Glu Ser Asp  Ser Ile Cys Gly Ala  Ile Thr Cys Ala Ala  Asp Met
        2790                  2795                  2800

ttc agc tgc  cag ggc tct cgt gcc  tgc gtg ccc cga cat  tgg ctt   9312
Phe Ser Cys  Gln Gly Ser Arg Ala  Cys Val Pro Arg His  Trp Leu
        2805                  2810                  2815
```

```
tgt gat ggt  gaa agg gac tgt cca  gat gga agc gat gag  ctt tcc      9357
Cys Asp Gly  Glu Arg Asp Cys Pro  Asp Gly Ser Asp Glu  Leu Ser
        2820              2825              2830

aca gca ggc  tgc gct ccc aat aat  aca tgt gat gaa aat  gct ttc      9402
Thr Ala Gly  Cys Ala Pro Asn Asn  Thr Cys Asp Glu Asn  Ala Phe
        2835              2840              2845

atg tgc cat  aat aaa gta tgc att  ccc aag caa ttt gtt  tgt gac      9447
Met Cys His  Asn Lys Val Cys Ile  Pro Lys Gln Phe Val  Cys Asp
        2850              2855              2860

cat gat gac  gac tgt gga gat ggc  tct gat gag tca ccg  cag tgt      9492
His Asp Asp  Asp Cys Gly Asp Gly  Ser Asp Glu Ser Pro  Gln Cys
        2865              2870              2875

gga tac cga  cag tgt ggt aca gaa  gaa ttt agt tgt gct  gat ggg      9537
Gly Tyr Arg  Gln Cys Gly Thr Glu  Glu Phe Ser Cys Ala  Asp Gly
        2880              2885              2890

cgg tgt ctt  cta aat act caa tgg  cag tgt gat gga gac  ttt gac      9582
Arg Cys Leu  Leu Asn Thr Gln Trp  Gln Cys Asp Gly Asp  Phe Asp
        2895              2900              2905

tgt cct gac  cat tct gat gaa gca  cct tta aac cca aag  tgt aaa      9627
Cys Pro Asp  His Ser Asp Glu Ala  Pro Leu Asn Pro Lys  Cys Lys
        2910              2915              2920

agt gca gaa  cag tca tgc aac agt  tca ttt ttt atg tgc  aaa aat      9672
Ser Ala Glu  Gln Ser Cys Asn Ser  Ser Phe Phe Met Cys  Lys Asn
        2925              2930              2935

ggc agg tgc  att ccc agt gga ggt  ctt tgt gac aat aag  gat gac      9717
Gly Arg Cys  Ile Pro Ser Gly Gly  Leu Cys Asp Asn Lys  Asp Asp
        2940              2945              2950

tgt ggc gat  ggt tca gat gag aga  aac tgc cat ata aat  gaa tgt      9762
Cys Gly Asp  Gly Ser Asp Glu Arg  Asn Cys His Ile Asn  Glu Cys
        2955              2960              2965

ttg agt aag  aaa gtc agt gga tgt  tct caa gat tgt caa  gac ctt      9807
Leu Ser Lys  Lys Val Ser Gly Cys  Ser Gln Asp Cys Gln  Asp Leu
        2970              2975              2980

ccg gtc agt  tat aag tgc aaa tgc  tgg cct gga ttc caa  ctg aag      9852
Pro Val Ser  Tyr Lys Cys Lys Cys  Trp Pro Gly Phe Gln  Leu Lys
        2985              2990              2995

gat gac ggc  aaa aca tgt gta gac  att gat gaa tgc tct  tca ggc      9897
Asp Asp Gly  Lys Thr Cys Val Asp  Ile Asp Glu Cys Ser  Ser Gly
        3000              3005              3010

ttt ccc tgt  agc cag caa tgc atc  aat aca tac ggg act  tac aag      9942
Phe Pro Cys  Ser Gln Gln Cys Ile  Asn Thr Tyr Gly Thr  Tyr Lys
        3015              3020              3025

tgc ctc tgt  aca gat ggg tat gac  ata caa cct gat aac  cca aat      9987
Cys Leu Cys  Thr Asp Gly Tyr Glu  Ile Gln Pro Asp Asn  Pro Asn
        3030              3035              3040

ggc tgc aaa  tcg ctc tca gat gaa  gaa cct ttt tta att  ctt gct     10032
Gly Cys Lys  Ser Leu Ser Asp Glu  Glu Pro Phe Leu Ile  Leu Ala
        3045              3050              3055
```

```
gat cat cat  gag ata agg aaa att  agc act gat ggc tcc  aac tac      10077
Asp His His  Glu Ile Arg Lys Ile  Ser Thr Asp Gly Ser  Asn Tyr
        3060              3065              3070

aca ctt tta  aaa cag gga tta aac  aat gtt att gct ata  gac ttt      10122
Thr Leu Leu  Lys Gln Gly Leu Asn  Asn Val Ile Ala Ile  Asp Phe
        3075              3080              3085

gat tac aga  gaa gaa ttc atc tat  tgg atc gat tct agc  cga ccc      10167
Asp Tyr Arg  Glu Glu Phe Ile Tyr  Trp Ile Asp Ser Ser  Arg Pro
        3090              3095              3100

aat ggc agt  cgc ata aat aga atg  tgt tta aat gga agt  gac att      10212
Asn Gly Ser  Arg Ile Asn Arg Met  Cys Leu Asn Gly Ser  Asp Ile
        3105              3110              3115

aag gta gtt  cat aac aca gcg gtc  ccc aat gca ctt gct  gtc gat      10257
Lys Val Val  His Asn Thr Ala Val  Pro Asn Ala Leu Ala  Val Asp
        3120              3125              3130

tgg att gga  aaa aac ctc tat tgg  tct gac aca gaa aaa  aga atc      10302
Trp Ile Gly  Lys Asn Leu Tyr Trp  Ser Asp Thr Glu Lys  Arg Ile
        3135              3140              3145

att gaa gta  tcc aaa ctc aat ggc  ttg tac cct act ata  ctc gtt      10347
Ile Glu Val  Ser Lys Leu Asn Gly  Leu Tyr Pro Thr Ile  Leu Val
        3150              3155              3160

agc aaa agg  ctg aag ttt ccc aga  gac ttg tct tta gat  cct caa      10392
Ser Lys Arg  Leu Lys Phe Pro Arg  Asp Leu Ser Leu Asp  Pro Gln
        3165              3170              3175

gct gga tat  ttg tat tgg att gac  tgc tgc gag tat cct  cat att      10437
Ala Gly Tyr  Leu Tyr Trp Ile Asp  Cys Cys Glu Tyr Pro  His Ile
        3180              3185              3190

ggc cgt gtt  gga atg gat gga acc  aat cag agt gtt gtc  ata gaa      10482
Gly Arg Val  Gly Met Asp Gly Thr  Asn Gln Ser Val Val  Ile Glu
        3195              3200              3205

acc aag att  tct aga cct atg gca  cta aca ata gat tat  gtt aat      10527
Thr Lys Ile  Ser Arg Pro Met Ala  Leu Thr Ile Asp Tyr  Val Asn
        3210              3215              3220

cgt aga ctc  tac tgg gcc gat gaa  aat cac att gaa ttt  agc aac      10572
Arg Arg Leu  Tyr Trp Ala Asp Glu  Asn His Ile Glu Phe  Ser Asn
        3225              3230              3235

atg gat gga  tct cat aga cac aaa  gtc cct aat caa gat  att cca      10617
Met Asp Gly  Ser His Arg His Lys  Val Pro Asn Gln Asp  Ile Pro
        3240              3245              3250

ggg gtg att  gca cta aca ttg ttt  gaa gac tac atc tac  tgg act      10662
Gly Val Ile  Ala Leu Thr Leu Phe  Glu Asp Tyr Ile Tyr  Trp Thr
        3255              3260              3265

gat ggg aaa  acc aag tca ctc agc  cgt gcc cat aaa aca  tcg gga      10707
Asp Gly Lys  Thr Lys Ser Leu Ser  Arg Ala His Lys Thr  Ser Gly
        3270              3275              3280

gca gac aga  ctc tca ctg att tac  tca tgg cat gcc atc  aca gat      10752
Ala Asp Arg  Leu Ser Leu Ile Tyr  Ser Trp His Ala Ile  Thr Asp
        3285              3290              3295
```

```
atc cag gtg  tat cat tct tat aga  caa cct gat gtc tcc  aaa cat    10797
Ile Gln Val  Tyr His Ser Tyr Arg  Gln Pro Asp Val Ser  Lys His
        3300              3305              3310

ctc tgc atg  ata aat aat ggt ggt  tgc agt cat ttg tgc  ctt tta    10842
Leu Cys Met  Ile Asn Asn Gly Gly  Cys Ser His Leu Cys  Leu Leu
        3315              3320              3325

gcc cct gga  aaa acc cac act tgt  gca tgt ccc act aac  ttc tat    10887
Ala Pro Gly  Lys Thr His Thr Cys  Ala Cys Pro Thr Asn  Phe Tyr
        3330              3335              3340

ctg gca gct  gat aat agg act tgc  tta tcc aac tgc aca  gcc agc    10932
Leu Ala Ala  Asp Asn Arg Thr Cys  Leu Ser Asn Cys Thr  Ala Ser
        3345              3350              3355

cag ttt cgt  tgc aaa act gac aaa  tgt att cca ttc tgg  tgg aaa    10977
Gln Phe Arg  Cys Lys Thr Asp Lys  Cys Ile Pro Phe Trp  Trp Lys
        3360              3365              3370

tgt gac acc  gtg gat gac tgt ggt  gat gga tct gat gaa  cct gat    11022
Cys Asp Thr  Val Asp Asp Cys Gly  Asp Gly Ser Asp Glu  Pro Asp
        3375              3380              3385

gac tgt cct  gaa ttt aga tgt cag  cca ggc cga ttt cag  tgt ggg    11067
Asp Cys Pro  Glu Phe Arg Cys Gln  Pro Gly Arg Phe Gln  Cys Gly
        3390              3395              3400

act gga ctc  tgt gct cta cca gct  ttc atc tgt gat gga  gag aat    11112
Thr Gly Leu  Cys Ala Leu Pro Ala  Phe Ile Cys Asp Gly  Glu Asn
        3405              3410              3415

gat tgt gga  gac aat tct gat gaa  ctc aac tgt gac aca  cat gtc    11157
Asp Cys Gly  Asp Asn Ser Asp Glu  Leu Asn Cys Asp Thr  His Val
        3420              3425              3430

tgc ctg tca  ggt caa ttc aaa tgt  acc aag aac cag aaa  tgt atc    11202
Cys Leu Ser  Gly Gln Phe Lys Cys  Thr Lys Asn Gln Lys  Cys Ile
        3435              3440              3445

cca gta aac  tta aga tgt aat ggg  caa gat gac tgt ggt  gat gag    11247
Pro Val Asn  Leu Arg Cys Asn Gly  Gln Asp Asp Cys Gly  Asp Glu
        3450              3455              3460

gaa gat gaa  aga gac tgt cct gaa  aac agc tgt tct cca  gac tat    11292
Glu Asp Glu  Arg Asp Cys Pro Glu  Asn Ser Cys Ser Pro  Asp Tyr
        3465              3470              3475

ttc cag tgt  aag act acg aag cat  tgc att tcc aag ctg  tgg gtt    11337
Phe Gln Cys  Lys Thr Thr Lys His  Cys Ile Ser Lys Leu  Trp Val
        3480              3485              3490

tgt gac gag  gat cca gac tgt gca  gat gca tca gac gag  gcc aac    11382
Cys Asp Glu  Asp Pro Asp Cys Ala  Asp Ala Ser Asp Glu  Ala Asn
        3495              3500              3505

tgc gat aaa  aag act tgt gga cct  cat gaa ttc cag tgt  aaa aac    11427
Cys Asp Lys  Lys Thr Cys Gly Pro  His Glu Phe Gln Cys  Lys Asn
        3510              3515              3520

aac aac tgt  att ccc gat cac tgg  cgg tgt gat agc caa  aat gac    11472
Asn Asn Cys  Ile Pro Asp His Trp  Arg Cys Asp Ser Gln  Asn Asp
        3525              3530              3535
```

```
tgc agt gat  aat tca gat gaa gaa  aac tgt aag cca cag  aca tgt      11517
Cys Ser Asp  Asn Ser Asp Glu Glu  Asn Cys Lys Pro Gln  Thr Cys
         3540                 3545                 3550

aca ttg aaa  gat ttc ctc tgt gcc  aat ggg gac tgt gtt  tct tca      11562
Thr Leu Lys  Asp Phe Leu Cys Ala  Asn Gly Asp Cys Val  Ser Ser
         3555                 3560                 3565

agg ttt tgg  tgt gat gga gat ttt  gac tgt gca gat ggc  tct gat      11607
Arg Phe Trp  Cys Asp Gly Asp Phe  Asp Cys Ala Asp Gly  Ser Asp
         3570                 3575                 3580

gag aga aat  tgt gag aca agt tgt  tcc aaa gat cag ttc  cgg tgt      11652
Glu Arg Asn  Cys Glu Thr Ser Cys  Ser Lys Asp Gln Phe  Arg Cys
         3585                 3590                 3595

tcc aat ggt  cag tgt ata cca gca  aaa tgg aaa tgt gat  ggc cat      11697
Ser Asn Gly  Gln Cys Ile Pro Ala  Lys Trp Lys Cys Asp  Gly His
         3600                 3605                 3610

gaa gac tgc  aaa tat ggg gaa gat  gag aaa agc tgt gag  cca gct      11742
Glu Asp Cys  Lys Tyr Gly Glu Asp  Glu Lys Ser Cys Glu  Pro Ala
         3615                 3620                 3625

tct cct act  tgc tca tca cgt gaa  tat ata tgt gcc agt  gat gga      11787
Ser Pro Thr  Cys Ser Ser Arg Glu  Tyr Ile Cys Ala Ser  Asp Gly
         3630                 3635                 3640

tgt att tca  gca tct ttg aaa tgt  aat gga gaa tat gat  tgt gct      11832
Cys Ile Ser  Ala Ser Leu Lys Cys  Asn Gly Glu Tyr Asp  Cys Ala
         3645                 3650                 3655

gat ggt tca  gat gag atg gac tgt  gtg act gaa tgt aag  gaa gat      11877
Asp Gly Ser  Asp Glu Met Asp Cys  Val Thr Glu Cys Lys  Glu Asp
         3660                 3665                 3670

cag ttt cgg  tgc aaa aat aaa gcc  cac tgt att cca att  aga tgg      11922
Gln Phe Arg  Cys Lys Asn Lys Ala  His Cys Ile Pro Ile  Arg Trp
         3675                 3680                 3685

ctg tgt gat  gga att cat gac tgt  gtg gat ggc agt gat  gaa gag      11967
Leu Cys Asp  Gly Ile His Asp Cys  Val Asp Gly Ser Asp  Glu Glu
         3690                 3695                 3700

aac tgt gaa  aga gga gga aat ata  tgt aga gct gat gag  ttc ctt      12012
Asn Cys Glu  Arg Gly Gly Asn Ile  Cys Arg Ala Asp Glu  Phe Leu
         3705                 3710                 3715

tgc aat aat  tct ctc tgc aaa cta  cat ttc tgg gtg tgt  gat gga      12057
Cys Asn Asn  Ser Leu Cys Lys Leu  His Phe Trp Val Cys  Asp Gly
         3720                 3725                 3730

gag gac gac  tgt gga gac aac tct  gat gaa gcc cct gat  atg tgt      12102
Glu Asp Asp  Cys Gly Asp Asn Ser  Asp Glu Ala Pro Asp  Met Cys
         3735                 3740                 3745

gtc aaa ttt  ctt tgt cca tcc acg  aga cct cac aga tgc  aga aat      12147
Val Lys Phe  Leu Cys Pro Ser Thr  Arg Pro His Arg Cys  Arg Asn
         3750                 3755                 3760

aac aga ata  tgc cta cag tcg gag  caa atg tgc aat ggg  att gat      12192
Asn Arg Ile  Cys Leu Gln Ser Glu  Gln Met Cys Asn Gly  Ile Asp
         3765                 3770                 3775
```

```
gaa tgc ggt  gac aat tca gat gaa  gat cac tgt ggt ggt  aag ctg     12237
Glu Cys Gly  Asp Asn Ser Asp Glu  Asp His Cys Gly Gly  Lys Leu
        3780              3785              3790

aca tat aaa  gca agg cct tgt aaa  aag gat gag ttt gct  tgt agt     12282
Thr Tyr Lys  Ala Arg Pro Cys Lys  Lys Asp Glu Phe Ala  Cys Ser
        3795              3800              3805

aat aaa aaa  tgc atc cct atg gat  ctc cag tgt gat cga  ctt gat     12327
Asn Lys Lys  Cys Ile Pro Met Asp  Leu Gln Cys Asp Arg  Leu Asp
        3810              3815              3820

gac tgc gga  gat ggt tca gat gag  caa gga tgc aga ata  gct cct     12372
Asp Cys Gly  Asp Gly Ser Asp Glu  Gln Gly Cys Arg Ile  Ala Pro
        3825              3830              3835

act gaa tat  acc tgt gaa gat aat  gtg aat cca tgt gga  gat gat     12417
Thr Glu Tyr  Thr Cys Glu Asp Asn  Val Asn Pro Cys Gly  Asp Asp
        3840              3845              3850

gca tat tgt  aat caa ata aaa aca  tct gtt ttc tgt cgc  tgt aag     12462
Ala Tyr Cys  Asn Gln Ile Lys Thr  Ser Val Phe Cys Arg  Cys Lys
        3855              3860              3865

cct gga ttt  cag aga aac atg aaa  aac aga caa tgt gaa  gac ctt     12507
Pro Gly Phe  Gln Arg Asn Met Lys  Asn Arg Gln Cys Glu  Asp Leu
        3870              3875              3880

aat gaa tgt  ttg gtg ttt ggc aca  tgt tcc cat caa tgt  ata aat     12552
Asn Glu Cys  Leu Val Phe Gly Thr  Cys Ser His Gln Cys  Ile Asn
        3885              3890              3895

gtg gaa gga  tca tat aaa tgt gtg  tgt gac cag aat ttt  caa gaa     12597
Val Glu Gly  Ser Tyr Lys Cys Val  Cys Asp Gln Asn Phe  Gln Glu
        3900              3905              3910

aga aat aac  acc tgc ata gca gaa  ggc tct gaa gat caa  gtt ctc     12642
Arg Asn Asn  Thr Cys Ile Ala Glu  Gly Ser Glu Asp Gln  Val Leu
        3915              3920              3925

tac att gct  aat gac act gat atc  ctg ggt ttt ata tat  cca ttc     12687
Tyr Ile Ala  Asn Asp Thr Asp Ile  Leu Gly Phe Ile Tyr  Pro Phe
        3930              3935              3940

aac tac agt  ggc gat cat caa caa  att tct cat att gaa  cat aat     12732
Asn Tyr Ser  Gly Asp His Gln Gln  Ile Ser His Ile Glu  His Asn
        3945              3950              3955

tca aga ata  aca ggg atg gat gta  tat tat caa aga gat  atg att     12777
Ser Arg Ile  Thr Gly Met Asp Val  Tyr Tyr Gln Arg Asp  Met Ile
        3960              3965              3970

att tgg agt  act cag ttt aat cca  ggc gga att ttc tac  aaa agg     12822
Ile Trp Ser  Thr Gln Phe Asn Pro  Gly Gly Ile Phe Tyr  Lys Arg
        3975              3980              3985

atc cat ggc  aga gaa aaa agg caa  gca aac agt ggc ttg  att tgt     12867
Ile His Gly  Arg Glu Lys Arg Gln  Ala Asn Ser Gly Leu  Ile Cys
        3990              3995              4000

cct gaa ttt  aaa agg ccc agg gac  att gca gtt gac tgg  gtg gct     12912
Pro Glu Phe  Lys Arg Pro Arg Asp  Ile Ala Val Asp Trp  Val Ala
        4005              4010              4015
```

```
gga aac att  tac tgg act gat cat  tct aga atg cat tgg  ttc agt    12957
Gly Asn Ile  Tyr Trp Thr Asp His  Ser Arg Met His Trp  Phe Ser
        4020              4025               4030

tac tac act  act cac tgg acc agt  ctg agg tac tct atc  aac gta    13002
Tyr Tyr Thr  Thr His Trp Thr Ser  Leu Arg Tyr Ser Ile  Asn Val
        4035              4040               4045

ggg cag ctg  aat ggc ccc aac tgc  acc aga ctc tta aca  aat atg    13047
Gly Gln Leu  Asn Gly Pro Asn Cys  Thr Arg Leu Leu Thr  Asn Met
        4050              4055               4060

gct gga gaa  ccc tat gct att gca  gta aat cct aaa aga  ggg atg    13092
Ala Gly Glu  Pro Tyr Ala Ile Ala  Val Asn Pro Lys Arg  Gly Met
        4065              4070               4075

atg tac tgg  act gtt gtt ggg gat  cat tcc cat ata gaa  gaa gca    13137
Met Tyr Trp  Thr Val Val Gly Asp  His Ser His Ile Glu  Glu Ala
        4080              4085               4090

gcc atg gat  ggt aca ctg aga agg  att tta gta caa aag  aac tta    13182
Ala Met Asp  Gly Thr Leu Arg Arg  Ile Leu Val Gln Lys  Asn Leu
        4095              4100               4105

cag aga ccc  aca ggt ttg gct gtg  gat tat ttt agt gaa  cgc ata    13227
Gln Arg Pro  Thr Gly Leu Ala Val  Asp Tyr Phe Ser Glu  Arg Ile
        4110              4115               4120

tat tgg gct  gac ttt gag ctc tcc  atc att ggc agt gtt  ctg tat    13272
Tyr Trp Ala  Asp Phe Glu Leu Ser  Ile Ile Gly Ser Val  Leu Tyr
        4125              4130               4135

gat ggc tct  aat tca gta gtc tct  gtc agc agc aaa caa  ggt tta    13317
Asp Gly Ser  Asn Ser Val Val Ser  Val Ser Ser Lys Gln  Gly Leu
        4140              4145               4150

tta cat cca  cat agg atc gat atc  ttt gaa gat tat ata  tat gga    13362
Leu His Pro  His Arg Ile Asp Ile  Phe Glu Asp Tyr Ile  Tyr Gly
        4155              4160               4165

gca gga cct  aaa aat ggt gta ttt  cga gtt caa aaa ttt  ggc cat    13407
Ala Gly Pro  Lys Asn Gly Val Phe  Arg Val Gln Lys Phe  Gly His
        4170              4175               4180

ggt tca gta  gag tac tta gct tta  aat att gat aaa aca  aaa ggt    13452
Gly Ser Val  Glu Tyr Leu Ala Leu  Asn Ile Asp Lys Thr  Lys Gly
        4185              4190               4195

gtt ttg ata  tct cat cgt tat aaa  caa cta gat tta ccc  aat cca    13497
Val Leu Ile  Ser His Arg Tyr Lys  Gln Leu Asp Leu Pro  Asn Pro
        4200              4205               4210

tgc ttg gat  tta gca tgc gaa ttt  ctt tgc ttg cta aat  cct tct    13542
Cys Leu Asp  Leu Ala Cys Glu Phe  Leu Cys Leu Leu Asn  Pro Ser
        4215              4220               4225

ggg gcc act  tgt gtg tgt cca gaa  gga aaa tat ttg att  aat ggc    13587
Gly Ala Thr  Cys Val Cys Pro Glu  Gly Lys Tyr Leu Ile  Asn Gly
        4230              4235               4240

acc tgc aat  gat gac agc ctg tta  gat gat tca tgt aag  tta act    13632
Thr Cys Asn  Asp Asp Ser Leu Leu  Asp Asp Ser Cys Lys  Leu Thr
        4245              4250               4255
```

```
tgt gaa aat  gga gga aga tgc att  tta aat gag aaa ggt  gat ttg     13677
Cys Glu Asn  Gly Gly Arg Cys Ile  Leu Asn Glu Lys Gly  Asp Leu
         4260              4265              4270

agg tgt cac  tgt tgg ccc agt tat  tca gga gaa aga tgt  gaa gtc     13722
Arg Cys His  Cys Trp Pro Ser Tyr  Ser Gly Glu Arg Cys  Glu Val
         4275              4280              4285

aac cac tgt  agc aac tac tgc cag  aat gga gga act tgc  gta cca     13767
Asn His Cys  Ser Asn Tyr Cys Gln  Asn Gly Gly Thr Cys  Val Pro
         4290              4295              4300

tca gtt cta  ggg aga ccc acc tgc  agc tgt gca ctg ggt  ttc act     13812
Ser Val Leu  Gly Arg Pro Thr Cys  Ser Cys Ala Leu Gly  Phe Thr
         4305              4310              4315

ggg cca aac  tgt ggt aag aca gtc  tgt gag gat ttt tgt  caa aat     13857
Gly Pro Asn  Cys Gly Lys Thr Val  Cys Glu Asp Phe Cys  Gln Asn
         4320              4325              4330

gga gga acc  tgc att gtg act gct  gga aac cag cct tac  tgc cac     13902
Gly Gly Thr  Cys Ile Val Thr Ala  Gly Asn Gln Pro Tyr  Cys His
         4335              4340              4345

tgc cag ccg  gaa tac acc gga gac  aga tgt cag tac tac  gtg tgc     13947
Cys Gln Pro  Glu Tyr Thr Gly Asp  Arg Cys Gln Tyr Tyr  Val Cys
         4350              4355              4360

cac cac tat  tgt gtg aat tct gaa  tca tgt acc att ggg  gat gat     13992
His His Tyr  Cys Val Asn Ser Glu  Ser Cys Thr Ile Gly  Asp Asp
         4365              4370              4375

gga agt ctt  gaa tgt gtc tgt cca  acg cgc tat gaa gga  cca aaa     14037
Gly Ser Leu  Glu Cys Val Cys Pro  Thr Arg Tyr Glu Gly  Pro Lys
         4380              4385              4390

tgt gag gtt  gac aag tgt gta agg  tgc cat ggg ggg cac  tgc att     14082
Cys Glu Val  Asp Lys Cys Val Arg  Cys His Gly Gly His  Cys Ile
         4395              4400              4405

ata aat aaa  gac agt gaa gat ata  ttt tgc aac tgc act  aat gga     14127
Ile Asn Lys  Asp Ser Glu Asp Ile  Phe Cys Asn Cys Thr  Asn Gly
         4410              4415              4420

aag att gcc  tct agc tgt cag tta  tgt gat ggc tac tgt  tac aat     14172
Lys Ile Ala  Ser Ser Cys Gln Leu  Cys Asp Gly Tyr Cys  Tyr Asn
         4425              4430              4435

ggt ggc aca  tgc cag ctg gac ccc  gag aca aat gta cct  gtg tgt     14217
Gly Gly Thr  Cys Gln Leu Asp Pro  Glu Thr Asn Val Pro  Val Cys
         4440              4445              4450

cta tgc tcc  acc aac tgg tca ggc  aca cag tgt gaa agg  cca gcc     14262
Leu Cys Ser  Thr Asn Trp Ser Gly  Thr Gln Cys Glu Arg  Pro Ala
         4455              4460              4465

cca aag agc  agc aag tct gat cat  atc agc aca aga agc  att gcc     14307
Pro Lys Ser  Ser Lys Ser Asp His  Ile Ser Thr Arg Ser  Ile Ala
         4470              4475              4480

atc att gtg  cct ctc gtc ctc ttg  gtg act ttg ata acc  acc tta     14352
Ile Ile Val  Pro Leu Val Leu Leu  Val Thr Leu Ile Thr  Thr Leu
         4485              4490              4495
```

```
gta att ggt  tta gtg ctt tgt aaa  aga aaa aga agg aca  aaa aca   14397
Val Ile Gly  Leu Val Leu Cys Lys  Arg Lys Arg Arg Thr  Lys Thr
         4500               4505               4510

att aga aga  caa cct att atc aat  gga gga ata aat gta  gaa att   14442
Ile Arg Arg  Gln Pro Ile Ile Asn  Gly Gly Ile Asn Val  Glu Ile
         4515               4520               4525

ggc aat cca  tct tat aac atg tat  gag gta gat cat gat  cac aac   14487
Gly Asn Pro  Ser Tyr Asn Met Tyr  Glu Val Asp His Asp  His Asn
         4530               4535               4540

gat gga ggt  ctt tta gat cct ggc  ttt atg ata gac cca  aca aag   14532
Asp Gly Gly  Leu Leu Asp Pro Gly  Phe Met Ile Asp Pro  Thr Lys
         4545               4550               4555

gcc agg tac  ata ggg gga gga ccc  agt gct ttc aag ctt  cca cac   14577
Ala Arg Tyr  Ile Gly Gly Gly Pro  Ser Ala Phe Lys Leu  Pro His
         4560               4565               4570

aca gcg ccg  ccc atc tac cta aac  tct gat ttg aaa gga  cca cta   14622
Thr Ala Pro  Pro Ile Tyr Leu Asn  Ser Asp Leu Lys Gly  Pro Leu
         4575               4580               4585

act gct ggg  cca aca aat tac tcc  aat ccg gta tat gca  aaa tta   14667
Thr Ala Gly  Pro Thr Asn Tyr Ser  Asn Pro Val Tyr Ala  Lys Leu
         4590               4595               4600

tat atg gat  ggg caa aac tgt cga  aac tcc tta gga agt  gtt gat   14712
Tyr Met Asp  Gly Gln Asn Cys Arg  Asn Ser Leu Gly Ser  Val Asp
         4605               4610               4615

gaa agg aaa  gaa ctg ctt cca aag  aaa ata gaa att ggt  ata aga   14757
Glu Arg Lys  Glu Leu Leu Pro Lys  Lys Ile Glu Ile Gly  Ile Arg
         4620               4625               4630

gag aca gtg  gca taatcagtga tatcttttat atgctgtata aatgtataag   14809
Glu Thr Val  Ala
         4635
```

aatattagga gtacatttgg tatgtcccaa caggtattat acgtggttgg catcagcatt 14869

acctctttct ttatcttttt cctggttaat tgttttctga gttttttggg ttttattttt 14929

tgctgatgac tattgattga ccatttgtat ggtatttta tgaaaaagaa ctgcactaca 14989

gtacaattta caacaatgct gctgatatga cacaccttg aatttgttaa aattaaaaac 15049

aacgtattcc tttgtagtgt gaatatgagc aatctatttt atatgaactt ttttggttgt 15109

acttaatcaa cgaggagaat ctctgcactt ttccattata cggtttgaag gctgtaatac 15169

agtgtcattt tattttctg tttaaattga tggaaaaatg attgaatggt caactctctt 15229

ctttgtgccc ataaagatcg attcagactc tgctgaaaat atatagctct cacaagttca 15289

gcatcacctg ctttgaaatt agccttagat tgccaaccaa tagatgagaa ttttgaggaa 15349

aaaaattaaa aatatgtaaa attaataatt tgcatgaaca cagatgacta cattttccaa 15409

aacttagtgg actctatgtg atgtactaaa tgtatacacc ttgtaagcaa tagttatatt 15469

taggtggtag aacatagcaa aaatataacc gaaagttggc cgactgcact tgctatggaa 15529

```
taagaccttt tattctccct cagtctcgag ataaatagcc agcctagagc acaacagggc   15589

attgggtact tgcatcttag gtatttcttc ccagtcacat ccattttgtg gaagattaac   15649

ccaacccctt acactacact gaacactaaa gaataacata taagcacaca aattggtgac   15709

agaatttcaa ttacgtgaac gcatcctctt tgctaggtca aaaacaaagg gcaaagcaga   15769

cattttagta tacagagtga ttggcaaata ttttcaagat ttaatatgag caacccatta   15829

tttgccctat ccaaaatata ttcaagggcc ttccaagttg tagaagaaca atgatcttcc   15889

cataatcaaa agtggagagt cgaaatgctg tgccagttgc tctggtattc aggtttctct   15949

gggtttttaca gaacgcatgg accccattca cgtttggttt gtttatcttc aaatttgagt   16009

tgaaacgagt gcgatttatt taagttgtat ataaaaataa aaggatagca tttttataca   16069

aatatctttta aaggcacaaa agatttattc acaagttttg gagggctttt tgttcctctg   16129

atagacatga ctgactttta gctgtcataa tgtattaacc taacagatga aatatgttaa   16189

atatgtggtt gctctcttatc cctttgtaca agcattaaaa aaactgctgt tttataagaa   16249

gacttttgt tgtactatgt gcatgcatac tacctatttc taaactttgc catattgagg   16309

cctttataaa ctattgattt atgtaatact agtgcaattt tgcttgaaca atgttatgca   16369

tatcataaac tttttcaggt tcttgtttaa gtacatttt taaattgaac agtatttttc   16429

attttggtta taatatagtc attttgccta tgtttctaca atgaagtgtt aaatacttta   16489

taaaaaattg ttgactgact tatttaaatg aaattctaca tatttaaaaa aaaaaa      16545
```

```
<210>   33
<211>   4636
<212>   PRT
<213>   Homo sapiens

<400>   33
```

```
Met Thr Pro Leu Gly Ser Arg Leu Gln Ala Ala Pro Ala Ala Ala Ala
1               5                   10                  15


Ala Ala Gly Pro Lys Val Pro Pro Ser Ser Leu Gln Arg Arg Leu Pro
            20                  25                  30


Tyr Arg Ala Thr Thr Met Ser Glu Phe Leu Leu Ala Leu Leu Thr Leu
            35                  40                  45


Ser Gly Leu Leu Pro Ile Ala Arg Val Leu Thr Val Gly Ala Asp Arg
        50                  55                  60


Asp Gln Gln Leu Cys Asp Pro Gly Glu Phe Leu Cys His Asp His Val
65                  70                  75                  80


Thr Cys Val Ser Arg Ser Trp Leu Cys Asp Gly Asp Pro Asp Cys Pro
```

```
                    85                  90                      95

Asp Asp Ser Asp Glu Ser Leu Asp Thr Cys Pro Glu Glu Val Glu Ile
            100                 105                 110

Lys Cys Pro Leu Asn His Ile Ala Cys Leu Gly Thr Asn Lys Cys Val
            115                 120                 125

His Leu Ser Gln Leu Cys Asn Gly Val Leu Asp Cys Pro Asp Gly Tyr
    130                 135                 140

Asp Glu Gly Val His Cys Gln Glu Leu Leu Ser Asn Cys Gln Gln Leu
145                 150                 155                 160

Asn Cys Gln Tyr Lys Cys Thr Met Val Arg Asn Ser Thr Arg Cys Tyr
                165                 170                 175

Cys Glu Asp Gly Phe Glu Ile Thr Glu Asp Gly Arg Ser Cys Lys Asp
            180                 185                 190

Gln Asp Glu Cys Ala Val Tyr Gly Thr Cys Ser Gln Thr Cys Arg Asn
            195                 200                 205

Thr His Gly Ser Tyr Thr Cys Ser Cys Val Glu Gly Tyr Leu Met Gln
    210                 215                 220

Pro Asp Asn Arg Ser Cys Lys Ala Lys Ile Glu Pro Thr Asp Arg Pro
225                 230                 235                 240

Pro Ile Leu Leu Ile Ala Asn Phe Glu Thr Ile Glu Val Phe Tyr Leu
            245                 250                 255

Asn Gly Ser Lys Met Ala Thr Leu Ser Ser Val Asn Gly Asn Glu Ile
            260                 265                 270

His Thr Leu Asp Phe Ile Tyr Asn Glu Asp Val Ile Cys Trp Ile Glu
    275                 280                 285

Ser Arg Glu Ser Ser Asn Gln Leu Lys Cys Ile Gln Ile Thr Lys Ala
    290                 295                 300

Gly Gly Leu Thr Asp Glu Trp Thr Ile Asn Ile Leu Gln Ser Phe His
305                 310                 315                 320

Asn Val Gln Gln Met Ala Ile Asp Trp Leu Thr Arg Asn Leu Tyr Phe
            325                 330                 335
```

Val Asp His Val Gly Asp Arg Ile Phe Val Cys Asn Ser Asn Gly Ser
   340   345   350

Val Cys Val Thr Leu Ile Asp Leu Glu Leu His Asn Pro Lys Ala Ile
   355   360   365

Ala Val Asp Pro Ile Ala Gly Lys Leu Phe Phe Thr Asp Tyr Gly Asn
  370   375   380

Val Ala Lys Val Glu Arg Cys Asp Met Asp Gly Met Asn Arg Thr Arg
385   390   395   400

Ile Ile Asp Ser Lys Thr Glu Gln Pro Ala Ala Leu Ala Leu Asp Leu
   405   410   415

Val Asn Lys Leu Val Tyr Trp Val Asp Leu Tyr Leu Asp Tyr Val Gly
   420   425   430

Val Val Asp Tyr Gln Gly Lys Asn Arg His Thr Val Ile Gln Gly Arg
   435   440   445

Gln Val Arg His Leu Tyr Gly Ile Thr Val Phe Glu Asp Tyr Leu Tyr
  450   455   460

Ala Thr Asn Ser Asp Asn Tyr Asn Ile Val Arg Ile Asn Arg Phe Asn
465   470   475   480

Gly Thr Asp Ile His Ser Leu Ile Lys Ile Glu Asn Ala Trp Gly Ile
   485   490   495

Arg Ile Tyr Gln Lys Arg Thr Gln Pro Thr Val Arg Ser His Ala Cys
   500   505   510

Glu Val Asp Pro Tyr Gly Met Pro Gly Gly Cys Ser His Ile Cys Leu
   515   520   525

Leu Ser Ser Ser Tyr Lys Thr Arg Thr Cys Arg Cys Arg Thr Gly Phe
  530   535   540

Asn Leu Gly Ser Asp Gly Arg Ser Cys Lys Arg Pro Lys Asn Glu Leu
545   550   555   560

Phe Leu Phe Tyr Gly Lys Gly Arg Pro Gly Ile Val Arg Gly Met Asp
     565   570   575

Leu Asn Thr Lys Ile Ala Asp Glu Tyr Met Ile Pro Ile Glu Asn Leu
   580   585   590

Val Asn Pro Arg Ala Leu Asp Phe His Ala Glu Thr Asn Tyr Ile Tyr
    595   600   605

Phe Ala Asp Thr Thr Ser Phe Leu Ile Gly Arg Gln Lys Ile Asp Gly
    610   615   620

Thr Glu Arg Glu Thr Ile Leu Lys Asp Asp Leu Asp Asn Val Glu Gly
625   630   635   640

Ile Ala Val Asp Trp Ile Gly Asn Asn Leu Tyr Trp Thr Asn Asp Gly
          645   650   655

His Arg Lys Thr Ile Asn Val Ala Arg Leu Glu Lys Ala Ser Gln Ser
          660   665   670

Arg Lys Thr Leu Leu Glu Gly Glu Met Ser His Pro Arg Gly Ile Val
          675   680   685

Val Asp Pro Ile Asn Gly Trp Met Tyr Trp Thr Asp Trp Glu Glu Asp
    690   695   700

Glu Ile Asp Asp Ser Val Gly Arg Ile Glu Lys Ala Trp Met Asp Gly
705   710   715   720

Phe Asn Arg Gln Ile Phe Val Thr Ser Lys Met Leu Trp Pro Asn Gly
          725   730   735

Leu Thr Leu Asp Phe His Thr Asn Thr Leu Tyr Trp Cys Asp Ala Tyr
          740   745   750

Tyr Asp His Ile Glu Lys Val Phe Leu Asn Gly Thr His Arg Lys Ile
          755   760   765

Val Tyr Ser Gly Arg Glu Leu Asn His Pro Phe Gly Leu Ser His His
    770   775   780

Gly Asn Tyr Val Phe Trp Thr Asp Tyr Met Asn Gly Ser Ile Phe Gln
785   790   795   800

Leu Asp Leu Ile Thr Ser Glu Val Thr Leu Leu Arg His Glu Arg Pro
          805   810   815

Pro Leu Phe Gly Leu Gln Ile Tyr Asp Pro Arg Lys Gln Gln Gly Asp
          820   825   830

Asn Met Cys Arg Val Asn Asn Gly Gly Cys Ser Thr Leu Cys Leu Ala
          835   840   845

Ile Pro Gly Gly Arg Val Cys Ala Cys Ala Asp Asn Gln Leu Leu Asp
  850   855   860

Glu Asn Gly Thr Thr Cys Thr Phe Asn Pro Gly Glu Ala Leu Pro His
865   870   875   880

Ile Cys Lys Ala Gly Glu Phe Arg Cys Lys Asn Arg His Cys Ile Gln
      885   890   895

Ala Arg Trp Lys Cys Asp Gly Asp Asp Asp Cys Leu Asp Gly Ser Asp
      900   905   910

Glu Asp Ser Val Asn Cys Phe Asn His Ser Cys Pro Asp Asp Gln Phe
      915   920   925

Lys Cys Gln Asn Asn Arg Cys Ile Pro Lys Arg Trp Leu Cys Asp Gly
    930   935   940

Ala Asn Asp Cys Gly Ser Asn Glu Asp Glu Ser Asn Gln Thr Cys Thr
945   950   955   960

Ala Arg Thr Cys Gln Val Asp Gln Phe Ser Cys Gly Asn Gly Arg Cys
      965   970   975

Ile Pro Arg Ala Trp Leu Cys Asp Arg Glu Asp Asp Cys Gly Asp Gln
      980   985   990

Thr Asp Glu Met Ala Ser Cys Glu Phe Pro Thr Cys Glu Pro Leu Thr
      995   1000   1005

Gln Phe Val Cys Lys Ser Gly Arg Cys Ile Ser Ser Lys Trp His
   1010   1015   1020

Cys Asp Ser Asp Asp Asp Cys Gly Asp Gly Ser Asp Glu Val Gly
   1025   1030   1035

Cys Val His Ser Cys Phe Asp Asn Gln Phe Arg Cys Ser Ser Gly
   1040   1045   1050

Arg Cys Ile Pro Gly His Trp Ala Cys Asp Gly Asp Asn Asp Cys
   1055   1060   1065

Gly Asp Phe Ser Asp Glu Ala Gln Ile Asn Cys Thr Lys Glu Glu
   1070   1075   1080

Ile His Ser Pro Ala Gly Cys Asn Gly Asn Glu Phe Gln Cys His
   1085   1090   1095

```
Pro Asp  Gly Asn Cys Val Pro  Asp Leu Trp Arg Cys  Asp Gly Glu
    1100                1105                1110

Lys Asp  Cys Glu Asp Gly Ser  Asp Glu Lys Gly Cys  Asn Gly Thr
    1115                1120                1125

Ile Arg  Leu Cys Asp His Lys  Thr Lys Phe Ser Cys  Trp Ser Thr
    1130                1135                1140

Gly Arg  Cys Ile Asn Lys Ala  Trp Val Cys Asp Gly  Asp Ile Asp
    1145                1150                1155

Cys Glu  Asp Gln Ser Asp Glu  Asp Asp Cys Asp Ser  Phe Leu Cys
    1160                1165                1170

Gly Pro  Pro Lys His Pro Cys  Ala Asn Asp Thr Ser  Val Cys Leu
    1175                1180                1185

Gln Pro  Glu Lys Leu Cys Asn  Gly Lys Lys Asp Cys  Pro Asp Gly
    1190                1195                1200

Ser Asp  Glu Gly Tyr Leu Cys  Asp Glu Cys Ser Leu  Asn Asn Gly
    1205                1210                1215

Gly Cys  Ser Asn His Cys Ser  Val Val Pro Gly Arg  Gly Ile Val
    1220                1225                1230

Cys Ser  Cys Pro Glu Gly Leu  Gln Leu Asn Lys Asp  Asn Lys Thr
    1235                1240                1245

Cys Glu  Ile Val Asp Tyr Cys  Ser Asn His Leu Lys  Cys Ser Gln
    1250                1255                1260

Val Cys  Glu Gln His Lys His  Thr Val Lys Cys Ser  Cys Tyr Glu
    1265                1270                1275

Gly Trp  Lys Leu Asp Val Asp  Gly Glu Ser Cys Thr  Ser Val Asp
    1280                1285                1290

Pro Phe  Glu Ala Phe Ile Ile  Phe Ser Ile Arg His  Glu Ile Arg
    1295                1300                1305

Arg Ile  Asp Leu His Lys Arg  Asp Tyr Ser Leu Leu  Val Pro Gly
    1310                1315                1320

Leu Arg  Asn Thr Ile Ala Leu  Asp Phe His Phe Asn  Gln Ser Leu
    1325                1330                1335
```

```
Leu Tyr  Trp Thr Asp Val Val  Glu Asp Arg Ile Tyr  Arg Gly Lys
    1340              1345              1350

Leu Ser  Glu Ser Gly Gly Val  Ser Ala Ile Glu Val  Val Val Glu
    1355              1360              1365

His Gly  Leu Ala Thr Pro Glu  Gly Leu Thr Val Asp  Trp Ile Ala
    1370              1375              1380

Gly Asn  Ile Tyr Trp Ile Asp  Ser Asn Leu Asp Gln  Ile Glu Val
    1385              1390              1395

Ala Lys  Leu Asp Gly Ser Leu  Arg Thr Thr Leu Ile  Ala Gly Ala
    1400              1405              1410

Met Glu  His Pro Arg Ala Ile  Ala Leu Asp Pro Arg  Tyr Gly Ile
    1415              1420              1425

Leu Phe  Trp Thr Asp Trp Asp  Ala Asn Phe Pro Arg  Ile Glu Ser
    1430              1435              1440

Ala Ser  Met Ser Gly Ala Gly  Arg Lys Thr Ile Tyr  Lys Asp Met
    1445              1450              1455

Lys Thr  Gly Ala Trp Pro Asn  Gly Leu Thr Val Asp  His Phe Glu
    1460              1465              1470

Lys Arg  Ile Val Trp Thr Asp  Ala Arg Ser Asp Ala  Ile Tyr Ser
    1475              1480              1485

Ala Leu  Tyr Asp Gly Thr Asn  Met Ile Glu Ile Ile  Arg Gly His
    1490              1495              1500

Glu Tyr  Leu Ser His Pro Phe  Ala Val Ser Leu Tyr  Gly Ser Glu
    1505              1510              1515

Val Tyr  Trp Thr Asp Trp Arg  Thr Asn Thr Leu Ser  Lys Ala Asn
    1520              1525              1530

Lys Trp  Thr Gly Gln Asn Val  Ser Val Ile Gln Lys  Thr Ser Ala
    1535              1540              1545

Gln Pro  Phe Asp Leu Gln Ile  Tyr His Pro Ser Arg  Gln Pro Gln
    1550              1555              1560

Ala Pro  Asn Pro Cys Ala Ala  Asn Asp Gly Lys Gly  Pro Cys Ser
    1565              1570              1575
```

```
His Met  Cys Leu Ile Asn His  Asn Arg Ser Ala Ala  Cys Ala Cys
    1580                 1585                 1590

Pro His  Leu Met Lys Leu Ser  Ser Asp Lys Lys Thr  Cys Tyr Glu
    1595                 1600                 1605

Met Lys  Lys Phe Leu Leu Tyr  Ala Arg Arg Ser Glu  Ile Arg Gly
    1610                 1615                 1620

Val Asp  Ile Asp Asn Pro Tyr  Phe Asn Phe Ile Thr  Ala Phe Thr
    1625                 1630                 1635

Val Pro  Asp Ile Asp Asp Val  Thr Val Ile Asp Phe  Asp Ala Ser
    1640                 1645                 1650

Glu Glu  Arg Leu Tyr Trp Thr  Asp Ile Lys Thr Gln  Thr Ile Lys
    1655                 1660                 1665

Arg Ala  Phe Ile Asn Gly Thr  Gly Leu Glu Thr Val  Ile Ser Arg
    1670                 1675                 1680

Asp Ile  Gln Ser Ile Arg Gly  Leu Ala Val Asp Trp  Val Ser Arg
    1685                 1690                 1695

Asn Leu  Tyr Trp Ile Ser Ser  Glu Phe Asp Glu Thr  Gln Ile Asn
    1700                 1705                 1710

Val Ala  Arg Leu Asp Gly Ser  Leu Lys Thr Ser Ile  Ile His Gly
    1715                 1720                 1725

Ile Asp  Lys Pro Gln Cys Leu  Ala Ala His Pro Val  Arg Gly Lys
    1730                 1735                 1740

Leu Tyr  Trp Thr Asp Gly Asn  Thr Ile Asn Met Ala  Asn Met Asp
    1745                 1750                 1755

Gly Ser  Asn Ser Lys Ile Leu  Phe Gln Asn Gln Lys  Glu Pro Val
    1760                 1765                 1770

Gly Leu  Ser Ile Asp Tyr Val  Glu Asn Lys Leu Tyr  Trp Ile Ser
    1775                 1780                 1785

Ser Gly  Asn Gly Thr Ile Asn  Arg Cys Asn Leu Asp  Gly Gly Asn
    1790                 1795                 1800

Leu Glu  Val Ile Glu Ser Met  Lys Glu Glu Leu Thr  Lys Ala Thr
    1805                 1810                 1815
```

```
Ala Leu  Thr Ile Met Asp Lys  Lys Leu Trp Trp Ala  Asp Gln Asn
    1820                 1825             1830

Leu Ala  Gln Leu Gly Thr Cys  Ser Lys Arg Asp Gly  Arg Asn Pro
    1835                 1840             1845

Thr Ile  Leu Arg Asn Lys Thr  Ser Gly Val Val His  Met Lys Val
    1850                 1855             1860

Tyr Asp  Lys Glu Ala Gln Gln  Gly Ser Asn Ser Cys  Gln Leu Asn
    1865                 1870             1875

Asn Gly  Gly Cys Ser Gln Leu  Cys Leu Pro Thr Ser  Glu Thr Thr
    1880                 1885             1890

Arg Thr  Cys Met Cys Thr Val  Gly Tyr Tyr Leu Gln  Lys Asn Arg
    1895                 1900             1905

Met Ser  Cys Gln Gly Ile Glu  Ser Phe Leu Met Tyr  Ser Val His
    1910                 1915             1920

Glu Gly  Ile Arg Gly Ile Pro  Leu Glu Pro Ser Asp  Lys Met Asp
    1925                 1930             1935

Ala Leu  Met Pro Ile Ser Gly  Thr Ser Phe Ala Val  Gly Ile Asp
    1940                 1945             1950

Phe His  Ala Glu Asn Asp Thr  Ile Tyr Trp Thr Asp  Met Gly Phe
    1955                 1960             1965

Asn Lys  Ile Ser Arg Ala Lys  Arg Asp Gln Thr Trp  Lys Glu Asp
    1970                 1975             1980

Ile Ile  Thr Asn Gly Leu Gly  Arg Val Glu Gly Ile  Ala Val Asp
    1985                 1990             1995

Trp Ile  Ala Gly Asn Ile Tyr  Trp Thr Asp His Gly  Phe Asn Leu
    2000                 2005             2010

Ile Glu  Val Ala Arg Leu Asn  Gly Ser Phe Arg Tyr  Val Ile Ile
    2015                 2020             2025

Ser Gln  Gly Leu Asp Gln Pro  Arg Ser Ile Ala Val  His Pro Glu
    2030                 2035             2040

Lys Gly  Leu Leu Phe Trp Thr  Glu Trp Gly Gln Met  Pro Cys Ile
    2045                 2050             2055
```

```
Gly Lys  Ala Arg Leu Asp Gly  Ser Glu Lys Val Val  Leu Val Ser
    2060             2065             2070

Met Gly  Ile Ala Trp Pro Asn  Gly Ile Ser Ile Asp  Tyr Glu Glu
    2075             2080             2085

Asn Lys  Leu Tyr Trp Cys Asp  Ala Arg Thr Asp Lys  Ile Glu Arg
    2090             2095             2100

Ile Asp  Leu Glu Thr Gly Gly  Asn Arg Glu Met Val  Leu Ser Gly
    2105             2110             2115

Ser Asn  Val Asp Met Phe Ser  Val Ala Val Phe Gly  Ala Tyr Ile
    2120             2125             2130

Tyr Trp  Ser Asp Arg Ala His  Ala Asn Gly Ser Val  Arg Arg Gly
    2135             2140             2145

His Lys  Asn Asp Ala Thr Glu  Thr Ile Thr Met Arg  Thr Gly Leu
    2150             2155             2160

Gly Val  Asn Leu Lys Glu Val  Lys Ile Phe Asn Arg  Val Arg Glu
    2165             2170             2175

Lys Gly  Thr Asn Val Cys Ala  Arg Asp Asn Gly Gly  Cys Lys Gln
    2180             2185             2190

Leu Cys  Leu Tyr Arg Gly Asn  Ser Arg Arg Thr Cys  Ala Cys Ala
    2195             2200             2205

His Gly  Tyr Leu Ala Glu Asp  Gly Val Thr Cys Leu  Arg His Glu
    2210             2215             2220

Gly Tyr  Leu Leu Tyr Ser Gly  Arg Thr Ile Leu Lys  Ser Ile His
    2225             2230             2235

Leu Ser  Asp Glu Thr Asn Leu  Asn Ser Pro Ile Arg  Pro Tyr Glu
    2240             2245             2250

Asn Pro  Arg Tyr Phe Lys Asn  Val Ile Ala Leu Ala  Phe Asp Tyr
    2255             2260             2265

Asn Gln  Arg Arg Lys Gly Thr  Asn Arg Ile Phe Tyr  Ser Asp Ala
    2270             2275             2280

His Phe  Gly Asn Ile Gln Leu  Ile Lys Asp Asn Trp  Glu Asp Arg
    2285             2290             2295
```

```
Gln Val  Ile Val Glu Asn Val  Gly Ser Val Glu Gly  Leu Ala Tyr
    2300             2305             2310

His Arg  Ala Trp Asp Thr Leu  Tyr Trp Thr Ser Ser  Thr Thr Ser
    2315             2320             2325

Ser Ile  Thr Arg His Thr Val  Asp Gln Thr Arg Pro  Gly Ala Phe
    2330             2335             2340

Asp Arg  Glu Ala Val Ile Thr  Met Ser Glu Asp Asp  His Pro His
    2345             2350             2355

Val Leu  Ala Leu Asp Glu Cys  Gln Asn Leu Met Phe  Trp Thr Asn
    2360             2365             2370

Trp Asn  Glu Gln His Pro Ser  Ile Met Arg Ser Thr  Leu Thr Gly
    2375             2380             2385

Lys Asn  Ala Gln Val Val Val  Ser Thr Asp Ile Leu  Thr Pro Asn
    2390             2395             2400

Gly Leu  Thr Ile Asp Tyr Arg  Ala Glu Lys Leu Tyr  Phe Ser Asp
    2405             2410             2415

Gly Ser  Leu Gly Lys Ile Glu  Arg Cys Glu Tyr Asp  Gly Ser Gln
    2420             2425             2430

Arg His  Val Ile Val Lys Ser  Gly Pro Gly Thr Phe  Leu Ser Leu
    2435             2440             2445

Ala Val  Tyr Asp Asn Tyr Ile  Phe Trp Ser Asp Trp  Gly Arg Arg
    2450             2455             2460

Ala Ile  Leu Arg Ser Asn Lys  Tyr Thr Gly Gly Asp  Thr Lys Ile
    2465             2470             2475

Leu Arg  Ser Asp Ile Pro His  Gln Pro Met Gly Ile  Ile Ala Val
    2480             2485             2490

Ala Asn  Asp Thr Asn Ser Cys  Glu Leu Ser Pro Cys  Ala Leu Leu
    2495             2500             2505

Asn Gly  Gly Cys His Asp Leu  Cys Leu Leu Thr Pro  Asn Gly Arg
    2510             2515             2520

Val Asn  Cys Ser Cys Arg Gly  Asp Arg Ile Leu Leu  Glu Asp Asn
    2525             2530             2535
```

Arg Cys Val Thr Lys Asn Ser Ser Cys Asn Ala Tyr Ser Glu Phe
    2540   2545   2550

Glu Cys Gly Asn Gly Glu Cys Ile Asp Tyr Gln Leu Thr Cys Asp
    2555   2560   2565

Gly Ile Pro His Cys Lys Asp Lys Ser Asp Glu Lys Leu Leu Tyr
    2570   2575   2580

Cys Glu Asn Arg Ser Cys Arg Arg Gly Phe Lys Pro Cys Tyr Asn
    2585   2590   2595

Arg Arg Cys Ile Pro His Gly Lys Leu Cys Asp Gly Glu Asn Asp
    2600   2605   2610

Cys Gly Asp Asn Ser Asp Glu Leu Asp Cys Lys Val Ser Thr Cys
    2615   2620   2625

Ala Thr Val Glu Phe Arg Cys Ala Asp Gly Thr Cys Ile Pro Arg
    2630   2635   2640

Ser Ala Arg Cys Asn Gln Asn Ile Asp Cys Ala Asp Ala Ser Asp
    2645   2650   2655

Glu Lys Asn Cys Asn Asn Thr Asp Cys Thr His Phe Tyr Lys Leu
    2660   2665   2670

Gly Val Lys Thr Thr Gly Phe Ile Arg Cys Asn Ser Thr Ser Leu
    2675   2680   2685

Cys Val Leu Pro Thr Trp Ile Cys Asp Gly Ser Asn Asp Cys Gly
    2690   2695   2700

Asp Tyr Ser Asp Glu Leu Lys Cys Pro Val Gln Asn Lys His Lys
    2705   2710   2715

Cys Glu Glu Asn Tyr Phe Ser Cys Pro Ser Gly Arg Cys Ile Leu
    2720   2725   2730

Asn Thr Trp Ile Cys Asp Gly Gln Lys Asp Cys Glu Asp Gly Arg
    2735   2740   2745

Asp Glu Phe His Cys Asp Ser Ser Cys Ser Trp Asn Gln Phe Ala
    2750   2755   2760

Cys Ser Ala Gln Lys Cys Ile Ser Lys His Trp Ile Cys Asp Gly
    2765   2770   2775

Glu Asp Asp Cys Gly Asp Gly Leu Asp Glu Ser Asp Ser Ile Cys
    2780   2785   2790

Gly Ala Ile Thr Cys Ala Ala Asp Met Phe Ser Cys Gln Gly Ser
    2795   2800   2805

Arg Ala Cys Val Pro Arg His Trp Leu Cys Asp Gly Glu Arg Asp
    2810   2815   2820

Cys Pro Asp Gly Ser Asp Glu Leu Ser Thr Ala Gly Cys Ala Pro
    2825   2830   2835

Asn Asn Thr Cys Asp Glu Asn Ala Phe Met Cys His Asn Lys Val
    2840   2845   2850

Cys Ile Pro Lys Gln Phe Val Cys Asp His Asp Asp Asp Cys Gly
    2855   2860   2865

Asp Gly Ser Asp Glu Ser Pro Gln Cys Gly Tyr Arg Gln Cys Gly
    2870   2875   2880

Thr Glu Glu Phe Ser Cys Ala Asp Gly Arg Cys Leu Leu Asn Thr
    2885   2890   2895

Gln Trp Gln Cys Asp Gly Asp Phe Asp Cys Pro Asp His Ser Asp
    2900   2905   2910

Glu Ala Pro Leu Asn Pro Lys Cys Lys Ser Ala Glu Gln Ser Cys
    2915   2920   2925

Asn Ser Ser Phe Phe Met Cys Lys Asn Gly Arg Cys Ile Pro Ser
    2930   2935   2940

Gly Gly Leu Cys Asp Asn Lys Asp Asp Cys Gly Asp Gly Ser Asp
    2945   2950   2955

Glu Arg Asn Cys His Ile Asn Glu Cys Leu Ser Lys Lys Val Ser
    2960   2965   2970

Gly Cys Ser Gln Asp Cys Gln Asp Leu Pro Val Ser Tyr Lys Cys
    2975   2980   2985

Lys Cys Trp Pro Gly Phe Gln Leu Lys Asp Asp Gly Lys Thr Cys
    2990   2995   3000

Val Asp Ile Asp Glu Cys Ser Ser Gly Phe Pro Cys Ser Gln Gln
    3005   3010   3015

```
Cys Ile  Asn Thr Tyr Gly Thr  Tyr Lys Cys Leu Cys  Thr Asp Gly
    3020              3025              3030

Tyr Glu  Ile Gln Pro Asp Asn  Pro Asn Gly Cys Lys  Ser Leu Ser
    3035              3040              3045

Asp Glu  Glu Pro Phe Leu Ile  Leu Ala Asp His His  Glu Ile Arg
    3050              3055              3060

Lys Ile  Ser Thr Asp Gly Ser  Asn Tyr Thr Leu Leu  Lys Gln Gly
    3065              3070              3075

Leu Asn  Asn Val Ile Ala Ile  Asp Phe Asp Tyr Arg  Glu Glu Phe
    3080              3085              3090

Ile Tyr  Trp Ile Asp Ser Ser  Arg Pro Asn Gly Ser  Arg Ile Asn
    3095              3100              3105

Arg Met  Cys Leu Asn Gly Ser  Asp Ile Lys Val Val  His Asn Thr
    3110              3115              3120

Ala Val  Pro Asn Ala Leu Ala  Val Asp Trp Ile Gly  Lys Asn Leu
    3125              3130              3135

Tyr Trp  Ser Asp Thr Glu Lys  Arg Ile Ile Glu Val  Ser Lys Leu
    3140              3145              3150

Asn Gly  Leu Tyr Pro Thr Ile  Leu Val Ser Lys Arg  Leu Lys Phe
    3155              3160              3165

Pro Arg  Asp Leu Ser Leu Asp  Pro Gln Ala Gly Tyr  Leu Tyr Trp
    3170              3175              3180

Ile Asp  Cys Cys Glu Tyr Pro  His Ile Gly Arg Val  Gly Met Asp
    3185              3190              3195

Gly Thr  Asn Gln Ser Val Val  Ile Glu Thr Lys Ile  Ser Arg Pro
    3200              3205              3210

Met Ala  Leu Thr Ile Asp Tyr  Val Asn Arg Arg Leu  Tyr Trp Ala
    3215              3220              3225

Asp Glu  Asn His Ile Glu Phe  Ser Asn Met Asp Gly  Ser His Arg
    3230              3235              3240

His Lys  Val Pro Asn Gln Asp  Ile Pro Gly Val Ile  Ala Leu Thr
    3245              3250              3255
```

```
Leu Phe  Glu Asp Tyr Ile Tyr  Trp Thr Asp Gly Lys  Thr Lys Ser
    3260                3265                3270

Leu Ser  Arg Ala His Lys Thr  Ser Gly Ala Asp Arg  Leu Ser Leu
    3275                3280                3285

Ile Tyr  Ser Trp His Ala Ile  Thr Asp Ile Gln Val  Tyr His Ser
    3290                3295                3300

Tyr Arg  Gln Pro Asp Val Ser  Lys His Leu Cys Met  Ile Asn Asn
    3305                3310                3315

Gly Gly  Cys Ser His Leu Cys  Leu Leu Ala Pro Gly  Lys Thr His
    3320                3325                3330

Thr Cys  Ala Cys Pro Thr Asn  Phe Tyr Leu Ala Ala  Asp Asn Arg
    3335                3340                3345

Thr Cys  Leu Ser Asn Cys Thr  Ala Ser Gln Phe Arg  Cys Lys Thr
    3350                3355                3360

Asp Lys  Cys Ile Pro Phe Trp  Trp Lys Cys Asp Thr  Val Asp Asp
    3365                3370                3375

Cys Gly  Asp Gly Ser Asp Glu  Pro Asp Asp Cys Pro  Glu Phe Arg
    3380                3385                3390

Cys Gln  Pro Gly Arg Phe Gln  Cys Gly Thr Gly Leu  Cys Ala Leu
    3395                3400                3405

Pro Ala  Phe Ile Cys Asp Gly  Glu Asn Asp Cys Gly  Asp Asn Ser
    3410                3415                3420

Asp Glu  Leu Asn Cys Asp Thr  His Val Cys Leu Ser  Gly Gln Phe
    3425                3430                3435

Lys Cys  Thr Lys Asn Gln Lys  Cys Ile Pro Val Asn  Leu Arg Cys
    3440                3445                3450

Asn Gly  Gln Asp Asp Cys Gly  Asp Glu Glu Asp Glu  Arg Asp Cys
    3455                3460                3465

Pro Glu  Asn Ser Cys Ser Pro  Asp Tyr Phe Gln Cys  Lys Thr Thr
    3470                3475                3480

Lys His  Cys Ile Ser Lys Leu  Trp Val Cys Asp Glu  Asp Pro Asp
    3485                3490                3495
```

```
Cys Ala  Asp Ala Ser Asp Glu  Ala Asn Cys Asp Lys  Lys Thr Cys
    3500                  3505              3510

Gly Pro  His Glu Phe Gln Cys  Lys Asn Asn Asn Cys  Ile Pro Asp
    3515                  3520              3525

His Trp  Arg Cys Asp Ser Gln  Asn Asp Cys Ser Asp  Asn Ser Asp
    3530                  3535              3540

Glu Glu  Asn Cys Lys Pro Gln  Thr Cys Thr Leu Lys  Asp Phe Leu
    3545                  3550              3555

Cys Ala  Asn Gly Asp Cys Val  Ser Ser Arg Phe Trp  Cys Asp Gly
    3560                  3565              3570

Asp Phe  Asp Cys Ala Asp Gly  Ser Asp Glu Arg Asn  Cys Glu Thr
    3575                  3580              3585

Ser Cys  Ser Lys Asp Gln Phe  Arg Cys Ser Asn Gly  Gln Cys Ile
    3590                  3595              3600

Pro Ala  Lys Trp Lys Cys Asp  Gly His Glu Asp Cys  Lys Tyr Gly
    3605                  3610              3615

Glu Asp  Glu Lys Ser Cys Glu  Pro Ala Ser Pro Thr  Cys Ser Ser
    3620                  3625              3630

Arg Glu  Tyr Ile Cys Ala Ser  Asp Gly Cys Ile Ser  Ala Ser Leu
    3635                  3640              3645

Lys Cys  Asn Gly Glu Tyr Asp  Cys Ala Asp Gly Ser  Asp Glu Met
    3650                  3655              3660

Asp Cys  Val Thr Glu Cys Lys  Glu Asp Gln Phe Arg  Cys Lys Asn
    3665                  3670              3675

Lys Ala  His Cys Ile Pro Ile  Arg Trp Leu Cys Asp  Gly Ile His
    3680                  3685              3690

Asp Cys  Val Asp Gly Ser Asp  Glu Glu Asn Cys Glu  Arg Gly Gly
    3695                  3700              3705

Asn Ile  Cys Arg Ala Asp Glu  Phe Leu Cys Asn Asn  Ser Leu Cys
    3710                  3715              3720

Lys Leu  His Phe Trp Val Cys  Asp Gly Glu Asp Asp  Cys Gly Asp
    3725                  3730              3735
```

```
Asn Ser  Asp Glu Ala Pro Asp  Met Cys Val Lys Phe  Leu Cys Pro
    3740                 3745                 3750


Ser Thr  Arg Pro His Arg Cys  Arg Asn Asn Arg Ile  Cys Leu Gln
    3755                 3760                 3765


Ser Glu  Gln Met Cys Asn Gly  Ile Asp Glu Cys Gly  Asp Asn Ser
    3770                 3775                 3780


Asp Glu  Asp His Cys Gly Gly  Lys Leu Thr Tyr Lys  Ala Arg Pro
    3785                 3790                 3795


Cys Lys  Lys Asp Glu Phe Ala  Cys Ser Asn Lys Lys  Cys Ile Pro
    3800                 3805                 3810


Met Asp  Leu Gln Cys Asp Arg  Leu Asp Asp Cys Gly  Asp Gly Ser
    3815                 3820                 3825


Asp Glu  Gln Gly Cys Arg Ile  Ala Pro Thr Glu Tyr  Thr Cys Glu
    3830                 3835                 3840


Asp Asn  Val Asn Pro Cys Gly  Asp Asp Ala Tyr Cys  Asn Gln Ile
    3845                 3850                 3855


Lys Thr  Ser Val Phe Cys Arg  Cys Lys Pro Gly Phe  Gln Arg Asn
    3860                 3865                 3870


Met Lys  Asn Arg Gln Cys Glu  Asp Leu Asn Glu Cys  Leu Val Phe
    3875                 3880                 3885


Gly Thr  Cys Ser His Gln Cys  Ile Asn Val Glu Gly  Ser Tyr Lys
    3890                 3895                 3900


Cys Val  Cys Asp Gln Asn Phe  Gln Glu Arg Asn Asn  Thr Cys Ile
    3905                 3910                 3915


Ala Glu  Gly Ser Glu Asp Gln  Val Leu Tyr Ile Ala  Asn Asp Thr
    3920                 3925                 3930


Asp Ile  Leu Gly Phe Ile Tyr  Pro Phe Asn Tyr Ser  Gly Asp His
    3935                 3940                 3945


Gln Gln  Ile Ser His Ile Glu  His Asn Ser Arg Ile  Thr Gly Met
    3950                 3955                 3960


Asp Val  Tyr Tyr Gln Arg Asp  Met Ile Ile Trp Ser  Thr Gln Phe
    3965                 3970                 3975
```

```
Asn Pro  Gly Gly Ile Phe Tyr  Lys Arg Ile His Gly  Arg Glu Lys
    3980              3985              3990

Arg Gln  Ala Asn Ser Gly Leu  Ile Cys Pro Glu Phe  Lys Arg Pro
    3995              4000              4005

Arg Asp  Ile Ala Val Asp Trp  Val Ala Gly Asn Ile  Tyr Trp Thr
    4010              4015              4020

Asp His  Ser Arg Met His Trp  Phe Ser Tyr Tyr Thr  Thr His Trp
    4025              4030              4035

Thr Ser  Leu Arg Tyr Ser Ile  Asn Val Gly Gln Leu  Asn Gly Pro
    4040              4045              4050

Asn Cys  Thr Arg Leu Leu Thr  Asn Met Ala Gly Glu  Pro Tyr Ala
    4055              4060              4065

Ile Ala  Val Asn Pro Lys Arg  Gly Met Met Tyr Trp  Thr Val Val
    4070              4075              4080

Gly Asp  His Ser His Ile Glu  Glu Ala Ala Met Asp  Gly Thr Leu
    4085              4090              4095

Arg Arg  Ile Leu Val Gln Lys  Asn Leu Gln Arg Pro  Thr Gly Leu
    4100              4105              4110

Ala Val  Asp Tyr Phe Ser Glu  Arg Ile Tyr Trp Ala  Asp Phe Glu
    4115              4120              4125

Leu Ser  Ile Ile Gly Ser Val  Leu Tyr Asp Gly Ser  Asn Ser Val
    4130              4135              4140

Val Ser  Val Ser Ser Lys Gln  Gly Leu Leu His Pro  His Arg Ile
    4145              4150              4155

Asp Ile  Phe Glu Asp Tyr Ile  Tyr Gly Ala Gly Pro  Lys Asn Gly
    4160              4165              4170

Val Phe  Arg Val Gln Lys Phe  Gly His Gly Ser Val  Glu Tyr Leu
    4175              4180              4185

Ala Leu  Asn Ile Asp Lys Thr  Lys Gly Val Leu Ile  Ser His Arg
    4190              4195              4200

Tyr Lys  Gln Leu Asp Leu Pro  Asn Pro Cys Leu Asp  Leu Ala Cys
    4205              4210              4215
```

Glu Phe Leu Cys Leu Leu Asn Pro Ser Gly Ala Thr Cys Val Cys
    4220   4225   4230

Pro Glu Gly Lys Tyr Leu Ile Asn Gly Thr Cys Asn Asp Asp Ser
    4235   4240   4245

Leu Leu Asp Asp Ser Cys Lys Leu Thr Cys Glu Asn Gly Gly Arg
    4250   4255   4260

Cys Ile Leu Asn Glu Lys Gly Asp Leu Arg Cys His Cys Trp Pro
    4265   4270   4275

Ser Tyr Ser Gly Glu Arg Cys Glu Val Asn His Cys Ser Asn Tyr
    4280   4285   4290

Cys Gln Asn Gly Gly Thr Cys Val Pro Ser Val Leu Gly Arg Pro
    4295   4300   4305

Thr Cys Ser Cys Ala Leu Gly Phe Thr Gly Pro Asn Cys Gly Lys
    4310   4315   4320

Thr Val Cys Glu Asp Phe Cys Gln Asn Gly Gly Thr Cys Ile Val
    4325   4330   4335

Thr Ala Gly Asn Gln Pro Tyr Cys His Cys Gln Pro Glu Tyr Thr
    4340   4345   4350

Gly Asp Arg Cys Gln Tyr Tyr Val Cys His His Tyr Cys Val Asn
    4355   4360   4365

Ser Glu Ser Cys Thr Ile Gly Asp Asp Gly Ser Leu Glu Cys Val
    4370   4375   4380

Cys Pro Thr Arg Tyr Glu Gly Pro Lys Cys Glu Val Asp Lys Cys
    4385   4390   4395

Val Arg Cys His Gly Gly His Cys Ile Ile Asn Lys Asp Ser Glu
    4400   4405   4410

Asp Ile Phe Cys Asn Cys Thr Asn Gly Lys Ile Ala Ser Ser Cys
    4415   4420   4425

Gln Leu Cys Asp Gly Tyr Cys Tyr Asn Gly Gly Thr Cys Gln Leu
    4430   4435   4440

Asp Pro Glu Thr Asn Val Pro Val Cys Leu Cys Ser Thr Asn Trp
    4445   4450   4455

```
Ser Gly  Thr Gln Cys Glu Arg  Pro Ala Pro Lys Ser  Ser Lys Ser
    4460                 4465             4470

Asp His  Ile Ser Thr Arg Ser  Ile Ala Ile Ile Val  Pro Leu Val
    4475                 4480             4485

Leu Leu  Val Thr Leu Ile Thr  Thr Leu Val Ile Gly  Leu Val Leu
    4490                 4495             4500

Cys Lys  Arg Lys Arg Arg Thr  Lys Thr Ile Arg Arg  Gln Pro Ile
    4505                 4510             4515

Ile Asn  Gly Gly Ile Asn Val  Glu Ile Gly Asn Pro  Ser Tyr Asn
    4520                 4525             4530

Met Tyr  Glu Val Asp His Asp  His Asn Asp Gly Gly  Leu Leu Asp
    4535                 4540             4545

Pro Gly  Phe Met Ile Asp Pro  Thr Lys Ala Arg Tyr  Ile Gly Gly
    4550                 4555             4560

Gly Pro  Ser Ala Phe Lys Leu  Pro His Thr Ala Pro  Pro Ile Tyr
    4565                 4570             4575

Leu Asn  Ser Asp Leu Lys Gly  Pro Leu Thr Ala Gly  Pro Thr Asn
    4580                 4585             4590

Tyr Ser  Asn Pro Val Tyr Ala  Lys Leu Tyr Met Asp  Gly Gln Asn
    4595                 4600             4605

Cys Arg  Asn Ser Leu Gly Ser  Val Asp Glu Arg Lys  Glu Leu Leu
    4610                 4615             4620

Pro Lys  Lys Ile Glu Ile Gly  Ile Arg Glu Thr Val  Ala
    4625                 4630             4635
```

<210> 34
<211> 2242
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> n = a or c or g or t

<400> 34
gaatgccttt tagtgccttg cttcctgaac tagctccacag tagcccggcg gcccagggca   60
atccgaccac atttcactct caccgctgta ggaatccaga tgcaggccaa gtacagcagc   120

```
acgagggaca tgctggatga tgatggggac accaccatga gcctgcattc tcaagcctct     180

gccacaactc ggcatccaga gccccggcgc acagagcaca gggctccctc ttcaacgtgg     240

cgaccagtgg ccctgaccct gctgactttg tgcttggtgc tgctgatagg gctggcagcc     300

ctggggcttt tgttttttca gtactaccag ctctccaata ctggtcaaga caccatttct     360

caaatggaag aaagattagg aaatacgtcc caagagttgc aatctcttca agtccagaat     420

ataaagcttg caggaagtct gcagcatgtg gctgaaaaac tctgtcgtga gctgtataac     480

aaagctggag cacacaggtg cagcccttg acagaacaat ggaaatggca tggagacaat     540

tgctaccagt tctataaaga cagcaaaagt tgggaggact gtaaatattt ctgccttagt     600

gaaaactcta ccatgctgaa gataaacaaa caagaagacc tggaatttgc cgcgtctcag     660

agctactctg agttttttcta ctcttattgg acagggcttt tgcgccctga cagtggcaag     720

gcctggctgt ggatggatga aacccctttc acttctgaac tgttccatat tataatagat     780

gtcaccagcc caagaagcag agactgtgtg gccatcctta atgggatgat cttctcaaag     840

gactgcaaag aattgaagcg ttgtgtctgt gagagaaggg caggaatggt gaagccagag     900

agcctccatg tcccccctga aacattaggc gaaggtgact gattcgccct ctgcaactac     960

aaatagcaga gtgagccagg cggtgccaaa gcaagggcta gttgagacat tgggaaatgg    1020

aacataatca ggaaagacta tctctctgac tagtacaaaa tgggttctcg tgtttcctgt    1080

tcaggatcac cagcatttct gagcttgggt ttatgcacgt atttaacagt cacaagaagt    1140

cttatttaca tgccaccaac caacctcaga aacccataat gtcatctgcc ttcttggctt    1200

agagataact tttagctctc tttcttctca atgtctaata tcacctccct gtttcatgt    1260

cttccttaca cttggtggaa taagaaactt tttgaagtag aggaaataca ttgaggtaac    1320

atccttttct ctgacagtca agtagtccat cagaaattgg cagtcacttc ccagattgta    1380

ccagcaaata cacaaggaat tcttttgtt tgtttcagtt catactagtc ccttcccaat    1440

ccatcagtaa agacccccatc tgccttgtcc atgccgtttc ccaacaggga tgtcacttga    1500

tatgagaatc tcaaatctca atgccttata agcattcctt cctgtgtcca ttaagactct    1560

gataattgtc tcccctccat aggaatttct cccaggaaag aaatatatcc ccatctccgt    1620

ttcatatcag aactaccgtc cccgatattc ccttcagaga gattaaagac cagaaaaaag    1680

tgagcctctt catctgcacc tgtaatagtt tcagttccta ttttcttcca ttgacccata    1740

tttatacctt tcaggtactg aagatttaat aataataaat gtaaatactg tgaagtgtgt    1800

gtgattttac aatggactta tggttggtgg gaaaattcag catggaaatg cttttcaaaa    1860

tatgatagcg gtcattattt tgattgtgcc ttactgaaag tttttgggga atttacaaga    1920

gtactgatta catgcattatc tggagaaaat aagatgtctt tgaaatacat gttggcttca    1980

agaaaacagt tttaacgttt tcctaaaatg aaatcttttg aggtgagctt atggcatcaa    2040
```

```
cacatggttg atgaggaagc tgagttgcat tagtgcacat gatttccagt caggtcatgg    2100

gaaatgaaca gagacagtga catctttgta gctgctcctt tgtgaggcac ttctttcttg    2160

agatgactcc atgcacaaat ataacaggga tcattgggaa tgacaccatc acagccacca    2220

agnttattgg gttactgata at                                            2242
```

<210> 35
<211> 280
<212> PRT
<213> Homo sapiens

<400> 35

```
Met Gln Ala Lys Tyr Ser Ser Thr Arg Asp Met Leu Asp Asp Asp Gly
1               5                   10                  15

Asp Thr Thr Met Ser Leu His Ser Gln Ala Ser Ala Thr Thr Arg His
            20                  25                  30

Pro Glu Pro Arg Arg Thr Glu His Arg Ala Pro Ser Ser Thr Trp Arg
        35                  40                  45

Pro Val Ala Leu Thr Leu Leu Thr Leu Cys Leu Val Leu Leu Ile Gly
    50                  55                  60

Leu Ala Ala Leu Gly Leu Leu Phe Phe Gln Tyr Tyr Gln Leu Ser Asn
65                  70                  75                  80

Thr Gly Gln Asp Thr Ile Ser Gln Met Glu Glu Arg Leu Gly Asn Thr
                85                  90                  95

Ser Gln Glu Leu Gln Ser Leu Gln Val Gln Asn Ile Lys Leu Ala Gly
            100                 105                 110

Ser Leu Gln His Val Ala Glu Lys Leu Cys Arg Glu Leu Tyr Asn Lys
        115                 120                 125

Ala Gly Ala His Arg Cys Ser Pro Cys Thr Glu Gln Trp Lys Trp His
    130                 135                 140

Gly Asp Asn Cys Tyr Gln Phe Tyr Lys Asp Ser Lys Ser Trp Glu Asp
145                 150                 155                 160

Cys Lys Tyr Phe Cys Leu Ser Glu Asn Ser Thr Met Leu Lys Ile Asn
                165                 170                 175

Lys Gln Glu Asp Leu Glu Phe Ala Ala Ser Gln Ser Tyr Ser Glu Phe
            180                 185                 190

Phe Tyr Ser Tyr Trp Thr Gly Leu Leu Arg Pro Asp Ser Gly Lys Ala
        195                 200                 205

Trp Leu Trp Met Asp Gly Thr Pro Phe Thr Ser Glu Leu Phe His Ile
    210                 215                 220

Ile Ile Asp Val Thr Ser Pro Arg Ser Arg Asp Cys Val Ala Ile Leu
225                 230                 235                 240

Asn Gly Met Ile Phe Ser Lys Asp Cys Lys Glu Leu Lys Arg Cys Val
                245                 250                 255
```

```
Cys Glu Arg Arg Ala Gly Met Val Lys Pro Glu Ser Leu His Val Pro
            260                 265               270

Pro Glu Thr Leu Gly Glu Gly Asp
        275                 280
```

```
<210>  36
<211>  2323
<212>  DNA
<213>  Homo sapiens

<220>
<221>  misc_feature
<223>  n = a or c or g or t


<400>  36
gaatgccttt tagtgccttg cttcctgaac tagctcacag tagcccggcg gcccagggca      60
atccgaccac atttcactct caccgctgta ggaatccaga tgcaggccaa gtacagcagc     120
acgagggaca tgctggatga tgatgggdac accaccatga gcctgcattc tcaagcctct     180
gccacaactc ggcatccaga gccccggcgc acagagcaca gggctccctc ttcaacgtgg     240
cgaccagtgg ccctgaccct gctgactttg tgcttggtgc tgctgatagg gctggcagcc     300
ctggggcttt tgttttttca gtactaccag ctctccaata ctggtcaaga caccatttct     360
caaatggaag aaagattagg aaatacgtcc caagagttgc aatctcttca agtccagaat     420
ataaagcttg caggaagtct gcagcatgtg gctgaaaaac tctgtcgtga gctgtataac     480
aaagctggag gctatacaag aaacatggtg ccagcatctg cttcttctga gagcctcagg     540
cagcttccac acatggggga aagtgcagca gcacacaggt gcagccttg tacagaacaa     600
tggaaatggc atggagacaa ttgctaccag ttctataaag acagcaaaag ttgggaggac     660
tgtaaatatt tctgccttag tgaaaactct accatgctga agataaacaa acaagaagac     720
ctggaatttg ccgcgtctca gagctactct gagttttttct actcttattg gacagggctt     780
ttgcgccctg acagtggcaa ggcctggctg tggatggatg gaaccccttt cacttctgaa     840
ctgttccata ttataataga tgtcaccagc ccaagaagca gagactgtgt ggccatcctt     900
aatgggatga tcttctcaaa ggactgcaaa gaattgaagc gttgtgtctg tgagagaagg     960
gcaggaatgg tgaagccaga gagcctccat gtccccctg aaacattagg cgaaggtgac    1020
tgattcgccc tctgcaacta caaatagcag agtgagccag gcggtgccaa agcaagggct    1080
agttgagaca ttgggaaatg gaacataatc aggaaagact atctctctga ctagtacaaa    1140
atgggttctc gtgtttcctg ttcaggatca ccagcatttc tgacgcttggg tttatgcacg    1200
tatttaacag tcacaagaag tcttatttac atgccaccaa ccaacctcag aaaccataa    1260
tgtcatctgc cttcttggct tagagataac ttttagctct ctttcttctc aatgtctaat    1320
atcacctccc tgtttcatg tcttccttac acttggtgga ataagaaact ttttgaagta    1380
```

```
gaggaaatac attgaggtaa catccttttc tctgacagtc aagtagtcca tcagaaattg   1440

gcagtcactt cccagattgt accagcaaat acacaaggaa ttcttttttgt ttgtttcagt   1500

tcatactagt cccttcccaa tccatcagta aagacccccat ctgccttgtc catgccgttt   1560

cccaacaggg atgtcacttg atatgagaat ctcaaatctc aatgccttat aagcattcct   1620

tcctgtgtcc attaagactc tgataattgt ctcccctcca taggaatttc tcccaggaaa   1680

gaaatatatc cccatctccg tttcatatca gaactaccgt ccccgatatt cccttcagag   1740

agattaaaga ccagaaaaaa gtgagcctct tcatctgcac ctgtaatagt ttcagttcct   1800

attttcttcc attgacccat atttatacct ttcaggtact gaagatttaa taataataaa   1860

tgtaaatact gtgaagtgtg tgtgatttta caatggactt atggttggtg ggaaaattca   1920

gcatggaaat gcttttcaaa atatgatagc ggtcattatt ttgattgtgc cttactgaaa   1980

gttttttgggg aatttacaag agtactgatt acatgattat ctggagaaaa taagatgtct   2040

ttgaaataca tgttggcttc aagaaaacag ttttaacgtt ttcctaaaat gaaatctttt   2100

gaggtgagct tatggcatca acacatggtt gatgaggaag ctgagttgca ttagtgcaca   2160

tgatttccag tcaggtcatg ggaaatgaac agagacagtg acatctttgt agctgctcct   2220

ttgtgaggca cttctttctt gagatgactc catgcacaaa tataacaggg atcattggga   2280

atgacaccat cacagccacc aagttattg ggttactgat aat                       2323
```

<210> 37
<211> 307
<212> PRT
<213> Homo sapiens

<400> 37

```
Met Gln Ala Lys Tyr Ser Ser Thr Arg Asp Met Leu Asp Asp Gly
1               5                   10                  15

Asp Thr Thr Met Ser Leu His Ser Gln Ala Ser Ala Thr Thr Arg His
                20                  25                  30

Pro Glu Pro Arg Arg Thr Glu His Arg Ala Pro Ser Ser Thr Trp Arg
        35                  40                  45

Pro Val Ala Leu Thr Leu Leu Thr Leu Cys Leu Val Leu Leu Ile Gly
    50                  55                  60

Leu Ala Ala Leu Gly Leu Leu Phe Phe Gln Tyr Gln Leu Ser Asn
65                  70                  75                  80

Thr Gly Gln Asp Thr Ile Ser Gln Met Glu Glu Arg Leu Gly Asn Thr
                85                  90                  95

Ser Gln Glu Leu Gln Ser Leu Gln Val Gln Asn Ile Lys Leu Ala Gly
            100                 105                 110

Ser Leu Gln His Val Ala Glu Lys Leu Cys Arg Glu Leu Tyr Asn Lys
        115                 120                 125
```

```
Ala Gly Gly Tyr Thr Arg Asn Met Val Pro Ala Ser Ala Ser Ser Glu
    130                     135                     140

Ser Leu Arg Gln Leu Pro His Met Gly Glu Ser Ala Ala Ala His Arg
145                     150                     155                 160

Cys Ser Pro Cys Thr Glu Gln Trp Lys Trp His Gly Asp Asn Cys Tyr
                165                     170                     175

Gln Phe Tyr Lys Asp Ser Lys Ser Trp Glu Asp Cys Lys Tyr Phe Cys
                180                     185                     190

Leu Ser Glu Asn Ser Thr Met Leu Lys Ile Asn Lys Gln Glu Asp Leu
        195                     200                     205

Glu Phe Ala Ala Ser Gln Ser Tyr Ser Glu Phe Phe Tyr Ser Tyr Trp
    210                     215                     220

Thr Gly Leu Leu Arg Pro Asp Ser Gly Lys Ala Trp Leu Trp Met Asp
225                     230                     235                 240

Gly Thr Pro Phe Thr Ser Glu Leu Phe His Ile Ile Ile Asp Val Thr
                245                     250                     255

Ser Pro Arg Ser Arg Asp Cys Val Ala Ile Leu Asn Gly Met Ile Phe
                260                     265                     270

Ser Lys Asp Cys Lys Glu Leu Lys Arg Cys Val Cys Glu Arg Arg Ala
        275                     280                     285

Gly Met Val Lys Pro Glu Ser Leu His Val Pro Pro Glu Thr Leu Gly
    290                     295                     300

Glu Gly Asp
305

<210> 38
<211> 2714
<212> DNA
<213> Homo sapiens

<400> 38
gaatcgagcc cgacgtcgca tgctcccggc cgccatggcc gcgggattcc cgggtcgacg    60
atttcgtcgg gaggaatgga aggagaaggc ggaatgtggg agggctcagg gggatgtggg   120
agggacgaac ggagaagggg gagagagggg ggtccagtct cccctggccg agcattttt    180
ttttggaagt cctaggactg atctccagga ccagcactct tctcccagcc cttagggtcc   240
tgctcggcca aggccttccc tgccatgcga cctgtcagtg tctggcagtg gagcccctgg   300
gggctgctgc tgtgcctgct gtgcagttcg tgcttggggt ctccgtcccc ttccacgggc   360
cctgagaaga aggccgggag ccagggcgtt cggttccggc tggctggctt ccccaggaag   420
ccctacgagg gccgcgtgga gatacagcga gctggtgaat ggggcaccat ctgcgatgat   480
gacttcacgc tgcaggctgc ccacatcctc tgccgggagc tgggcttcac agaggccaca   540
ggctggaccc acagtgccaa atatgccct ggaacaggcc gcatctggct ggacaacttg   600
agctgcagtg ggaccgagca gagtgtgact gaatgtgcct cccgggggctg ggggaacagt   660
```

```
gactgtacgc acgatgagga tgctggggtc atctgcaaag accagcgcct ccctggcttc    720
tcggactcca atgtcattga ggtagagcat cacctgcaag tggaggaggt gcgaattcga    780
cccgccgttg ggtggggcag acgacccctg cccgtgacgg aggggctggt ggaagtcagg    840
cttcctgacg gctggtcgca agtgtgcgac aaaggctgga gcgcccacaa cagccacgtg    900
gtctgcggga tgctgggctt ccccagcgaa aagagggtca acgcggcctt ctacagaaag    960
ttgaggaagc gagcggccaa ggtctcagcc cgacaccca agccccttgg aaggctgcta    1020
gcccaacggc agcaacactc ctttggtctg catggggtgg cgtgcgtggg cacggaggcc    1080
cacctctccc tctgttccct ggagttctat cgtgccaatg acaccgccag gtgccctggg    1140
gggggccctg cagtggtgag ctgtgtgcca ggccctgtct acgcggcatc cagtgccag    1200
aagaagcaac aacagtcgaa gcctcagggg gaggcccgtg tccgtctaaa gggcggcgcc    1260
caccctggag agggccgggt agaagtcctg aaggccagca catggggcac agtctgtgac    1320
cgcaagtggg acctgcatgc agccagcgtg gtgtgtcggg agctgggctt cgggagtgct    1380
cgagaagctc tgagtggcgc tcgcatgggg cagggcatgg gtgctatcca cctgagtgaa    1440
gttcgctgct ctggacagga gctctccctc tggaagtgcc cccacaagaa catccacagct    1500
gaggattgtt cacatagcca ggatgccggg gtccggtgca acctacctta cactggggca    1560
gagaccagga tccgactcag tgggggccgc agccaacatg aggggcgagt cgaggtgcaa    1620
ataggggac ctgggccct tcgctggggc ctcatctgtg gggatgactg ggggaccctg    1680
gaggccatgg tggcctgtag gcaactgggt ctgggctacg ccaaccacgg cctgcaggag    1740
acctggtact gggactctgg gaatataaca gaggtggtga tgagtggagt gcgctgcaca    1800
gggactgagc tgtccctgga tcagtgtgcc catcatggca cccacatcac ctgcaagagg    1860
acagggaccc gcttcactgc tggagtcatc tgttctgaga ctgcatcaga tctgttgctg    1920
cactcagcac tggtgcagga gaccgcctac atcgaagacc ggcccctgca tatgttgtac    1980
tgtgctgcgg aagagaactg cctggccagc tcagcccgct cagccaactg gccctatggt    2040
caccggcgtc tgctccgatt ctcctcccag atccacaacc tgggacgagc tgacttcagg    2100
cccaaggctg ggcgccactc ctgggtgtgg cacgagtgcc atggggcatta ccacagcatg    2160
gacatcttca ctcactatga tatcctcacc ccaaatggca ccaaggtggc tgagggccac    2220
aaagctagtt tctgtctcga agacactgag tgtcaggagg atgtctccaa gcggtatgag    2280
tgtgccaact ttggagagca aggcatcact gtgggttgct gggatctcta ccggcatgac    2340
attgactgtc agtggattga catcacggat gtgaagccag gaaactacat tctccaggtt    2400
gtcatcaacc caaactttga agtagcagag agtgacttta ccaacaatgc aatgaaatgt    2460
aactgcaaat atgatgaca tagaatctgg gtgcacaact gccacattgg tgatgccttc    2520
agtgaagagg cccacaggag gtttgaacgc tcccctggcc agaccagcac ctagattatg    2580
```

taagtgccac tgcccttgc aaaccgcccc tggcgcctaa tggcaggggt ctgaggctgc   2640

cattacctca ggagcttatc aagaaaccca tgtcagcaac catgtattgc ggccgctcta   2700

gaggaatcgc cagc   2714

<210> 39
<211> 769
<212> PRT
<213> Homo sapiens

<400> 39

Met Arg Pro Val Ser Val Trp Gln Trp Ser Pro Trp Gly Leu Leu Leu
1   5   10   15

Cys Leu Leu Cys Ser Ser Cys Leu Gly Ser Pro Ser Pro Ser Thr Gly
                20   25   30

Pro Glu Lys Lys Ala Gly Ser Gln Gly Leu Arg Phe Arg Leu Ala Gly
        35   40   45

Phe Pro Arg Lys Pro Tyr Glu Gly Arg Val Glu Ile Gln Arg Ala Gly
    50   55   60

Glu Trp Gly Thr Ile Cys Asp Asp Asp Phe Thr Leu Gln Ala Ala His
65   70   75   80

Ile Leu Cys Arg Glu Leu Gly Phe Thr Glu Ala Thr Gly Trp Thr His
                85   90   95

Ser Ala Lys Tyr Gly Pro Gly Thr Gly Arg Ile Trp Leu Asp Asn Leu
                100   105   110

Ser Cys Ser Gly Thr Glu Gln Ser Val Thr Glu Cys Ala Ser Arg Gly
            115   120   125

Trp Gly Asn Ser Asp Cys Thr His Asp Glu Asp Ala Gly Val Ile Cys
    130   135   140

Lys Asp Gln Arg Leu Pro Gly Phe Ser Asp Ser Asn Val Ile Glu Val
145   150   155   160

Glu His His Leu Gln Val Glu Glu Val Arg Ile Arg Pro Ala Val Gly
                165   170   175

Trp Gly Arg Arg Pro Leu Pro Val Thr Glu Gly Leu Val Glu Val Arg
            180   185   190

Leu Pro Asp Gly Trp Ser Gln Val Cys Asp Lys Gly Trp Ser Ala His
        195   200   205

Asn Ser His Val Val Cys Gly Met Leu Gly Phe Pro Ser Glu Lys Arg
    210   215   220

Val Asn Ala Ala Phe Tyr Arg Lys Leu Arg Arg Ala Ala Lys Val
225   230   235   240

Ser Ala Arg His Pro Lys Pro Leu Gly Arg Leu Leu Ala Gln Arg Gln
                245   250   255

Gln His Ser Phe Gly Leu His Gly Val Ala Cys Val Gly Thr Glu Ala

```
                260                   265                   270

His Leu Ser Leu Cys Ser Leu Glu Phe Tyr Arg Ala Asn Asp Thr Ala
          275                   280                   285

Arg Cys Pro Gly Gly Gly Pro Ala Val Val Ser Cys Val Pro Gly Pro
          290                   295                   300

Val Tyr Ala Ala Ser Ser Gly Gln Lys Lys Gln Gln Gln Ser Lys Pro
305                   310                   315                   320

Gln Gly Glu Ala Arg Val Arg Leu Lys Gly Gly Ala His Pro Gly Glu
                325                   330                   335

Gly Arg Val Glu Val Leu Lys Ala Ser Thr Trp Gly Thr Val Cys Asp
                340                   345                   350

Arg Lys Trp Asp Leu His Ala Ala Ser Val Val Cys Arg Glu Leu Gly
          355                   360                   365

Phe Gly Ser Ala Arg Glu Ala Leu Ser Gly Ala Arg Met Gly Gln Gly
          370                   375                   380

Met Gly Ala Ile His Leu Ser Glu Val Arg Cys Ser Gly Gln Glu Leu
385                   390                   395                   400

Ser Leu Trp Lys Cys Pro His Lys Asn Ile Thr Ala Glu Asp Cys Ser
                405                   410                   415

His Ser Gln Asp Ala Gly Val Arg Cys Asn Leu Pro Tyr Thr Gly Ala
          420                   425                   430

Glu Thr Arg Ile Arg Leu Ser Gly Gly Arg Ser Gln His Glu Gly Arg
          435                   440                   445

Val Glu Val Gln Ile Gly Gly Pro Gly Pro Leu Arg Trp Gly Leu Ile
450                   455                   460

Cys Gly Asp Asp Trp Gly Thr Leu Glu Ala Met Val Ala Cys Arg Gln
465                   470                   475                   480

Leu Gly Leu Gly Tyr Ala Asn His Gly Leu Gln Glu Thr Trp Tyr Trp
                485                   490                   495

Asp Ser Gly Asn Ile Thr Glu Val Val Met Ser Gly Val Arg Cys Thr
          500                   505                   510

Gly Thr Glu Leu Ser Leu Asp Gln Cys Ala His His Gly Thr His Ile
          515                   520                   525

Thr Cys Lys Arg Thr Gly Thr Arg Phe Thr Ala Gly Val Ile Cys Ser
          530                   535                   540

Glu Thr Ala Ser Asp Leu Leu Leu His Ser Ala Leu Val Gln Glu Thr
545                   550                   555                   560

Ala Tyr Ile Glu Asp Arg Pro Leu His Met Leu Tyr Cys Ala Ala Glu
                565                   570                   575

Glu Asn Cys Leu Ala Ser Ser Ala Arg Ser Ala Asn Trp Pro Tyr Gly
          580                   585                   590

His Arg Arg Leu Leu Arg Phe Ser Ser Gln Ile His Asn Leu Gly Arg
```

```
            595                 600                 605
    Ala Asp Phe Arg Pro Lys Ala Gly Arg His Ser Trp Val Trp His Glu
        610                 615                 620

    Cys His Gly His Tyr His Ser Met Asp Ile Phe Thr His Tyr Asp Ile
    625                 630                 635                 640

    Leu Thr Pro Asn Gly Thr Lys Val Ala Glu Gly His Lys Ala Ser Phe
                    645                 650                 655

    Cys Leu Glu Asp Thr Glu Cys Gln Glu Asp Val Ser Lys Arg Tyr Glu
                660                 665                 670

    Cys Ala Asn Phe Gly Glu Gln Gly Ile Thr Val Gly Cys Trp Asp Leu
        675                 680                 685

    Tyr Arg His Asp Ile Asp Cys Gln Trp Ile Asp Thr Asp Val Lys
        690                 695                 700

    Pro Gly Asn Tyr Ile Leu Gln Val Val Ile Asn Pro Asn Phe Glu Val
    705                 710                 715                 720

    Ala Glu Ser Asp Phe Thr Asn Asn Ala Met Lys Cys Asn Cys Lys Tyr
                    725                 730                 735

    Asp Gly His Arg Ile Trp Val His Asn Cys His Ile Gly Asp Ala Phe
                740                 745                 750

    Ser Glu Glu Ala His Arg Arg Phe Glu Arg Ser Pro Gly Gln Thr Ser
                755                 760                 765

    Thr


    <210>  40
    <211>  1877
    <212>  DNA
    <213>  Homo sapiens

    <400>  40
    gtaggcactg tgcaaaacat actagtggat atagagatga ataagaaaaa gcccctgcac    60

    tcaaagagct ctcggattca tcaacaaatt attgtgcagt tagatagcct ccctccacct   120

    gtcttctcag agcaggtaat ggcaagcatg gctgccgtgc tcacctgggc tctggctctt   180

    ctttcagcgt tttcggccac ccaggcacgg aaaggcttct gggactactt cagccagacc   240

    agcgggggaca aaggcaggggt ggagcagatc catcagcaga agatggctcg cgagcccgcg   300

    accctgaaag acagccttga gcaagacctc aacaatatga acaagttcct ggaaaagctg   360

    aggcctctga gtgggagcga ggctcctcgg ctcccacagg acccggtggg catgcggcgg   420

    cagctgcagg aggagttgga ggaggtgaag gctcgcctcc agccctacat ggcagaggcg   480

    cacgagctgg tgggctggaa tttggagggc ttgcggcagc aactgaagcc ctacacgatg   540

    gatctgatgg agcaggtggc cctgcgcgtg caggagctgc aggagcagtt gcgcgtggtg   600

    ggggaagaca ccaaggccca gttgctgggg ggcgtggacg aggcttgggc tttgctgcag   660
```

```
ggactgcaga gccgcgtggt gcaccacacc ggccgcttca aagagctctt ccacccatac    720

gccgagagcc tggtgagcgg catcgggcgc cacgtgcagg agctgcaccg cagtgtggct    780

ccgcacgccc ccgccagccc cgcgcgcctc agtcgctgcg tgcaggtgct ctcccggaag    840

ctcacgctca aggccaaggc cctgcacgca cgcatccagc agaacctgga ccagctgcgc    900

gaagagctca gcagagcctt tgcaggcact gggactgagg aagggccgg cccggacccc     960

cagatgctct ccgaggaggt gcgccagcga cttcaggctt tccgccagga cacctacctg   1020

cagatagctg ccttcactcg cgccatcgac caggagactg aggaggtcca gcagcagctg   1080

gcgccacctc caccaggcca cagtgccttc gccccagagt ttcaacaaac agacagtggc   1140

aaggttctga gcaagctgca ggccgtctg gatgacctgt gggaagacat cactcacagc    1200

cttcatgacc agggccacag ccatctgggg gaccctgag gatctacctg cccaggccca    1260

ttcccagctc cttgtctggg gagccttggc tctgagcctc tagcatggtt cagtccttga   1320

aagtggcctg ttgggtggag ggtggaaggt cctgtgcagg acagggaggc caccaaaggg   1380

gctgctgtct cctgcacatc cagcctcctg cgactcccca atctggatgc attacattca   1440

ccaggctttg caaacccagc ctcccagtgc tcatttggga atgctcatga gttactccat   1500

tcaagggtga gggagtaggg agggagaggc accatgcatg tgggtgatta tctgcaagcc   1560

tgtttgccgt gatgctggaa gcctgtgcca ctacatcctg gagtctgaca ctgagcccct   1620

gcgagtgacc gtgagcacac agttccgtag cgggcgccat acgagactcg acgcgcgcgc   1680

accacaggt cccgaggag gacactcgac ggacacgagt gacgggaaat gtgcatctac      1740

actagcgcgc gacagctaga gcgatgacgg cgaggacgtc tcgcagccta ccagcaacgc   1800

gaagacgtgc ctcccggcgt cgtatggatt aacaagctcc aagtaggtg tacaacgccg     1860

cagcatgaac tcccagg                                                  1877
```

```
<210>  41
<211>  400
<212>  PRT
<213>  Homo sapiens

<400>  41

Met Asn Lys Lys Lys Pro Leu His Ser Lys Ser Ser Arg Ile His Gln
1               5                   10                  15

Gln Ile Ile Val Gln Leu Asp Ser Leu Pro Pro Pro Val Phe Ser Glu
                20                  25                  30

Gln Val Met Ala Ser Met Ala Val Leu Thr Trp Ala Leu Ala Leu
        35                  40                  45

Leu Ser Ala Phe Ser Ala Thr Gln Ala Arg Lys Gly Phe Trp Asp Tyr
        50                  55                  60

Phe Ser Gln Thr Ser Gly Asp Lys Gly Arg Val Glu Gln Ile His Gln
```

```
65                    70                    75                    80

Gln Lys Met Ala Arg Glu Pro Ala Thr Leu Lys Asp Ser Leu Glu Gln
                    85                    90                    95

Asp Leu Asn Asn Met Asn Lys Phe Leu Glu Lys Leu Arg Pro Leu Ser
                   100                   105                   110

Gly Ser Glu Ala Pro Arg Leu Pro Gln Asp Pro Val Gly Met Arg Arg
             115                   120                   125

Gln Leu Gln Glu Glu Leu Glu Val Lys Ala Arg Leu Gln Pro Tyr
    130                   135                   140

Met Ala Glu Ala His Glu Leu Val Gly Trp Asn Leu Glu Gly Leu Arg
145                   150                   155                   160

Gln Gln Leu Lys Pro Tyr Thr Met Asp Leu Met Glu Gln Val Ala Leu
                   165                   170                   175

Arg Val Gln Glu Leu Gln Glu Gln Leu Arg Val Val Gly Glu Asp Thr
                   180                   185                   190

Lys Ala Gln Leu Leu Gly Gly Val Asp Glu Ala Trp Ala Leu Leu Gln
                   195                   200                   205

Gly Leu Gln Ser Arg Val Val His His Thr Gly Arg Phe Lys Glu Leu
    210                   215                   220

Phe His Pro Tyr Ala Glu Ser Leu Val Ser Gly Ile Gly Arg His Val
225                   230                   235                   240

Gln Glu Leu His Arg Ser Val Ala Pro His Ala Pro Ala Ser Pro Ala
                   245                   250                   255

Arg Leu Ser Arg Cys Val Gln Val Leu Ser Arg Lys Leu Thr Leu Lys
             260                   265                   270

Ala Lys Ala Leu His Ala Arg Ile Gln Gln Asn Leu Asp Gln Leu Arg
             275                   280                   285

Glu Glu Leu Ser Arg Ala Phe Ala Gly Thr Gly Thr Glu Glu Gly Ala
    290                   295                   300

Gly Pro Asp Pro Gln Met Leu Ser Glu Glu Val Arg Gln Arg Leu Gln
305                   310                   315                   320

Ala Phe Arg Gln Asp Thr Tyr Leu Gln Ile Ala Ala Phe Thr Arg Ala
                   325                   330                   335

Ile Asp Gln Glu Thr Glu Glu Val Gln Gln Gln Leu Ala Pro Pro Pro
                   340                   345                   350

Pro Gly His Ser Ala Phe Ala Pro Glu Phe Gln Gln Thr Asp Ser Gly
             355                   360                   365

Lys Val Leu Ser Lys Leu Gln Leu Ala Arg Leu Asp Asp Leu Trp Glu Asp
    370                   375                   380

Ile Thr His Ser Leu His Asp Gln Gly His Ser His Leu Gly Asp Pro
385                   390                   395                   400

<210>  42
```

<211> 2128
<212> DNA
<213> Homo sapiens

<400> 42

```
gcaccggtcc ggaattcccg ggtcgacgat ttcgtctcaa cattcagcag aggccccaga    60
tcagcgtctg agccaggcca acaatgacca aggaggatgg gatcctgggt gcagctcatc   120
acaagcgtcg gggtgcagca aaaccatcca ggctggacag tggctggaca gttccaagaa   180
aagaaacgct tcactgaaga agtcattgaa tacttccaga agaaagttag cccagtgcat   240
ctgaaaatcc tgctgactag cgatgaagcc tggaagagat ttgtgcgtgt ggctgaattg   300
cccaggggaag aggcagatgc tctctatgaa gctctgaaga atcttacacc atatgtgact   360
attgaggaca aagacatgca gcaaaaagaa cagcagttta gggagtggtt tttgaaagag   420
tttcctcaaa tcagatggaa gattcaggag tccatagaaa ggcttcgtgt cattgcaaat   480
gagattgaaa aggtccacag aggctgcgtc atcgccaatg tggtgtctgg ctccactggc   540
atcctgtctg tcattggcgt tatgttggca ccatttacag cagggctgag cctgagcatt   600
actgcagctg gggtagggct gggaatagca tctgccacgg ctgggatcgc ctccagcatc   660
gtggagaaca catacacaag gtcagcagaa ctcacagcca gcaggctgac tgcaaccagc   720
actgaccaat tggaggcatt aagggacatt ctgcatgaca tcacacccaa tgtgctttcc   780
tttgcacttg attttgacga agccacaaaa atgattgcga atgatgtcca tacactcagg   840
agatctaaag ccactgttgg acgccctttg attgcttggc gatatgtacc tataaatgtt   900
gttgagacac tgagaacacg tggggcccccc acccggatag tgagaaaagt agcccggaac   960
ctgggcaagg ccacttcagg tgtccttgtt gtgctggatg tagtcaacct tgtgcaagac  1020
tcactggact tgcacaaggg ggcaaaatcc gagtctgctg agtcgctgag gcagtgggct  1080
caggagctgg aggagaatct caatgagctc acccatatcc atcagagtct aaaagcaggc  1140
taggcccaat tgttgcggga agtcagggac cccaaacgga gggactggct gaagccatgg  1200
cagaagaacg tggattgtga agatttcatg gacatttatt agttccccaa attaatactt  1260
ttataatttc ctatgcctgt ctttaccgca atctctaaac acaaattgtg aagatttcat  1320
ggacacttat cacttcccca atcaataccc ttgtgatttc ttatgcctgt ctttactta   1380
atctcctaat cctgtcagct gaggaggatg tatgtcacct caggaccatg tgataattgc  1440
gttaactgca caaattgtag agcatgtgtg tttgaacaat atgaaatctg ggcaccttga  1500
aaaaagaaca ggataacagc aattgttcag ggaataagag agataacctt aaactctgac  1560
caacagtgag ccgggtggaa cagagtcata tttctcttct ttcaaaagca aatgggagaa  1620
atatcgctga attcttttc tcagcaagga acatccctga gaaagagaat gcacccctga  1680
gggtgggtct ataaatggcc tccttgggtg tggccatctt ctatggtcga gactgtaggg  1740
```

```
atgaaataaa ccccagtctc ccatagtgct cccaggctta ttaggaagag gaaattcccg   1800

cctaataaat tttggtcaga ccggttgctc tcaaaaccct gtctcctgat aagatgttat   1860

caatgacaat ggtgcctgaa acctcattag caattttaat ttctccccgg tcctgtggtc   1920

ctgtgatctc accctgcctc cacttgcctt gtgatattct attaccttgt gaagtaggtg   1980

atctttgtga cccacaccct attcatacac tccctcccct tttgaaagtc cctaataaaa   2040

acttgctggt tttgcagctt gtgaggcatc acggaaccta ctgatgtgtg atgtctcccc   2100

tggacaccta gctttaaaat ttcaaaaa                                       2128
```

<210> 43
<211> 348
<212> PRT
<213> Homo sapiens

<400> 43

```
Met Gly Ser Trp Val Gln Leu Ile Thr Ser Val Gly Val Gln Gln Asn
1               5                   10                  15

His Pro Gly Trp Thr Val Ala Gly Gln Phe Gln Glu Lys Lys Arg Phe
            20                  25                  30

Thr Glu Glu Val Ile Glu Tyr Phe Gln Lys Lys Val Ser Pro Val His
        35                  40                  45

Leu Lys Ile Leu Leu Thr Ser Asp Glu Ala Trp Lys Arg Phe Val Arg
    50                  55                  60

Val Ala Glu Leu Pro Arg Glu Glu Ala Asp Ala Leu Tyr Glu Ala Leu
65                  70                  75                  80

Lys Asn Leu Thr Pro Tyr Val Thr Ile Glu Asp Lys Asp Met Gln Gln
                85                  90                  95

Lys Glu Gln Gln Phe Arg Glu Trp Phe Leu Lys Glu Phe Pro Gln Ile
            100                 105                 110

Arg Trp Lys Ile Gln Glu Ser Ile Glu Arg Leu Arg Val Ile Ala Asn
        115                 120                 125

Glu Ile Glu Lys Val His Arg Gly Cys Val Ile Ala Asn Val Val Ser
    130                 135                 140

Gly Ser Thr Gly Ile Leu Ser Val Ile Gly Val Met Leu Ala Pro Phe
145                 150                 155                 160

Thr Ala Gly Leu Ser Leu Ser Ile Thr Ala Ala Gly Val Gly Leu Gly
            165                 170                 175

Ile Ala Ser Ala Thr Ala Gly Ile Ala Ser Ser Ile Val Glu Asn Thr
        180                 185                 190

Tyr Thr Arg Ser Ala Glu Leu Thr Ala Ser Arg Leu Thr Ala Thr Ser
        195                 200                 205

Thr Asp Gln Leu Glu Ala Leu Arg Asp Ile Leu His Asp Ile Thr Pro
    210                 215                 220
```

```
Asn Val Leu Ser Phe Ala Leu Asp Phe Asp Glu Ala Thr Lys Met Ile
225                 230                 235                 240

Ala Asn Asp Val His Thr Leu Arg Arg Ser Lys Ala Thr Val Gly Arg
            245                 250                 255

Pro Leu Ile Ala Trp Arg Tyr Val Pro Ile Asn Val Val Glu Thr Leu
            260                 265                 270

Arg Thr Arg Gly Ala Pro Thr Arg Ile Val Arg Lys Val Ala Arg Asn
        275                 280                 285

Leu Gly Lys Ala Thr Ser Gly Val Leu Val Leu Asp Val Val Asn
    290                 295                 300

Leu Val Gln Asp Ser Leu Asp Leu His Lys Gly Ala Lys Ser Glu Ser
305                 310                 315                 320

Ala Glu Ser Leu Arg Gln Trp Ala Gln Glu Leu Glu Glu Asn Leu Asn
            325                 330                 335

Glu Leu Thr His Ile His Gln Ser Leu Lys Ala Gly
            340                 345
```

<210> 44
<211> 988
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> n = a or c or g or t

<220>
<221> CDS
<222> (129)..(971)

<400> 44

```
agagctgccg gngnnnnaat ggatagaata ctcttgacca nngacgcacg agcctgaacct      60

agctcacagt agcccggcgg cccagggcaa tccgaccaca tttcactctc accgctgtag     120

gaatccag atg cag gcc aag tac agc agc acg agg gac atg ctg gat gat     170
         Met Gln Ala Lys Tyr Ser Ser Thr Arg Asp Met Leu Asp Asp
          1               5              10

gat ggg gac acc acc atg agc ctg cat tct caa gcc tct gcc aca act     218
Asp Gly Asp Thr Thr Met Ser Leu His Ser Gln Ala Ser Ala Thr Thr
15                  20                  25                  30

cgg cat cca gag ccc cgg cgc aca gtt ttt cag tac tac cag ctc tcc     266
Arg His Pro Glu Pro Arg Arg Thr Val Phe Gln Tyr Tyr Gln Leu Ser
                35                  40                  45

aat act ggt caa gac acc att tct caa atg gaa gaa aga tta gga aat     314
Asn Thr Gly Gln Asp Thr Ile Ser Gln Met Glu Glu Arg Leu Gly Asn
            50                  55                  60

acg tcc caa gag ttg caa tct ctt caa gtc cag aat ata aag ctt gca     362
Thr Ser Gln Glu Leu Gln Ser Leu Gln Val Gln Asn Ile Lys Leu Ala
        65                  70                  75
```

```
gga agt ctg cag cat gtg gct gaa aaa ctc tgt cgt gag ctg tat aac      410
Gly Ser Leu Gln His Val Ala Glu Lys Leu Cys Arg Glu Leu Tyr Asn
    80                      85                  90

aaa gct gga ggc tat aca aga aac atg gtg cca gca tct gct tct tct      458
Lys Ala Gly Gly Tyr Thr Arg Asn Met Val Pro Ala Ser Ala Ser Ser
95                      100                 105                 110

gag agc ctc agg cag ctt cca cac atg ggg gaa agt gca gca gca cac      506
Glu Ser Leu Arg Gln Leu Pro His Met Gly Glu Ser Ala Ala Ala His
                    115                 120                 125

agg tgc agc cct tgt aca gaa caa tgg aaa tgg cat gga gac aat tgc      554
Arg Cys Ser Pro Cys Thr Glu Gln Trp Lys Trp His Gly Asp Asn Cys
                130                 135                 140

tac cag ttc tat aaa gac agc aaa agt tgg gag gac tgt aaa tat ttc      602
Tyr Gln Phe Tyr Lys Asp Ser Lys Ser Trp Glu Asp Cys Lys Tyr Phe
                145                 150                 155

tgc ctt agt gaa aac tct acc atg ctg aag ata aac aaa caa gaa gac      650
Cys Leu Ser Glu Asn Ser Thr Met Leu Lys Ile Asn Lys Gln Glu Asp
            160                 165                 170

ctg gaa ttt gcc gcg tct cag agc tac tct gag ttt ttc tac tct tat      698
Leu Glu Phe Ala Ala Ser Gln Ser Tyr Ser Glu Phe Phe Tyr Ser Tyr
        175                 180                 185                 190

tgg aca ggg ctt ttg cgc cct gac agt ggc aag gcc tgg ctg tgg atg      746
Trp Thr Gly Leu Leu Arg Pro Asp Ser Gly Lys Ala Trp Leu Trp Met
                    195                 200                 205

gat gga acc cct ttc act tct gaa ctg ttc cat att ata ata gat gtc      794
Asp Gly Thr Pro Phe Thr Ser Glu Leu Phe His Ile Ile Ile Asp Val
                210                 215                 220

acc agc cca aga agc aga gac tgt gtg gcc atc ctt aat ggg atg atc      842
Thr Ser Pro Arg Ser Arg Asp Cys Val Ala Ile Leu Asn Gly Met Ile
                225                 230                 235

ttc tca aag gac tgc aaa gaa ttg aag cgt tgt gtc tgt gag aga agg      890
Phe Ser Lys Asp Cys Lys Glu Leu Lys Arg Cys Val Cys Glu Arg Arg
        240                 245                 250

gca gga atg gtg aag cca gag agc ctc cat gtc ccc cct gaa aca tta      938
Ala Gly Met Val Lys Pro Glu Ser Leu His Val Pro Pro Glu Thr Leu
255                 260                 265                 270

ggc gaa ggt gac atg cat cat cat cat cat cat tagcctaggt tctagac      988
Gly Glu Gly Asp Met His His His His His His
                275                 280
```

```
<210>   45
<211>   281
<212>   PRT
<213>   Homo sapiens

<220>
<221>   misc_feature
<223>   n = a or c or g or t

<400>   45
```

```
Met Gln Ala Lys Tyr Ser Ser Thr Arg Asp Met Leu Asp Asp Asp Gly
1               5                   10                  15

Asp Thr Thr Met Ser Leu His Ser Gln Ala Ser Ala Thr Thr Arg His
            20                  25                  30

Pro Glu Pro Arg Arg Thr Val Phe Gln Tyr Tyr Gln Leu Ser Asn Thr
            35                  40                  45

Gly Gln Asp Thr Ile Ser Gln Met Glu Glu Arg Leu Gly Asn Thr Ser
        50                  55                  60

Gln Glu Leu Gln Ser Leu Gln Val Gln Asn Ile Lys Leu Ala Gly Ser
65                  70                  75                  80

Leu Gln His Val Ala Glu Lys Leu Cys Arg Glu Leu Tyr Asn Lys Ala
                85                  90                  95

Gly Gly Tyr Thr Arg Asn Met Val Pro Ala Ser Ala Ser Ser Glu Ser
            100                 105                 110

Leu Arg Gln Leu Pro His Met Gly Glu Ser Ala Ala Ala His Arg Cys
        115                 120                 125

Ser Pro Cys Thr Glu Gln Trp Lys Trp His Gly Asp Asn Cys Tyr Gln
        130                 135                 140

Phe Tyr Lys Asp Ser Lys Ser Trp Glu Asp Cys Lys Tyr Phe Cys Leu
145                 150                 155                 160

Ser Glu Asn Ser Thr Met Leu Lys Ile Asn Lys Gln Glu Asp Leu Glu
                165                 170                 175

Phe Ala Ala Ser Gln Ser Tyr Ser Glu Phe Phe Tyr Ser Tyr Trp Thr
                180                 185                 190

Gly Leu Leu Arg Pro Asp Ser Gly Lys Ala Trp Leu Trp Met Asp Gly
        195                 200                 205

Thr Pro Phe Thr Ser Glu Leu Phe His Ile Ile Ile Asp Val Thr Ser
        210                 215                 220

Pro Arg Ser Arg Asp Cys Val Ala Ile Leu Asn Gly Met Ile Phe Ser
225                 230                 235                 240

Lys Asp Cys Lys Glu Leu Lys Arg Cys Val Cys Glu Arg Arg Ala Gly
                245                 250                 255
```

```
Met Val Lys Pro Glu Ser Leu His Val Pro Pro Glu Thr Leu Gly Glu
        260                     265                     270

Gly Asp Met His His His His His His
        275                 280
```